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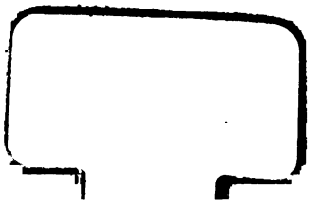

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University of Wyoming Bulletin

VOL. XV LARAMIE, APRIL, 1918 No. 1

CATALOGUE, 1918

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Entered February 11th, 1904, at Laramie, Wyoming, as second-class matter, under Act of Congress of July 16, 1894.

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The
Wyoming Labor Journal Publishing Company
Cheyenne, Wyoming
1918

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1918

JANUARY

S	M	T	W	T	F	S
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6	7	8	9	10	11	12
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FEBRUARY

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MARCH

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JULY

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1919

JANUARY

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MAY

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JUNE

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JULY

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SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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University Calendar

1918—			
May	6	Monday	Special Summer School begins
May	30	Thursday	Memorial Day
June	7	Friday	Instruction ends
June	8-12	Saturday-Wednesday	Commencement week
June	14	Friday	Special Summer School closes
June	17	Monday	Regular Summer School begins
July	26	Friday	Regular Summer School closes
Sept.	16	Monday	Examinations for admission
Sept.	17	Tuesday	*Registration—First Semester*
Nov. 28 - Dec.	1		Thanksgiving Vacation
Dec.	20	Friday	Christmas Vacation begins, 12 o'clock noon
1919—			
Jan.	6	Monday	University work resumed
Jan.	31	Friday	First Semester closes
Feb.	3	Monday	*Registration—Second Semester*
Feb.	12	Wednesday	Lincoln Day
Feb.	22	Saturday	Washington Day
April	18-20	Friday-Sunday	Easter Vacation
May	30	Friday	Memorial Day
June	6	Friday	Instruction ends
June	7-11	Saturday-Wednesday	Commencement week
June	16	Monday	Summer School begins
July	25	Friday	Summer School closes
Sept.	15	Monday	Examinations for admission
Sept.	16	Tuesday	*Registration—First Semester*

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The University of Wyoming

COLLEGES AND DIVISIONS

The University of Wyoming is a part of the free public educational system of the State. In accordance with the law of the State, it aims to complete the general educational work begun in the primary schools and carried forward through the grammar schools and high schools in the various communities throughout the State. To do this it is organized to offer work along the lines of study most in demand by the young people of this new State.

Since the University of Wyoming is a State University and will grow as the population of the State increases, it has seemed wise in its organization to recognize the usual undergraduate colleges, notwithstanding that the attendance in each is small. By recent action the University of Wyoming is organized as follows:

I. *The College of Liberal Arts—*
   1. The Division of Letters and Sciences.
   2. The Division of Commerce.
   3. The Division of Music.

II. *The College of Agriculture—*
   1. Resident Division.
      (a) Agriculture.
      (b) Home Economics.
   2. Extension Division.
   3. The Experiment Station.

III. *The College of Engineering—*
   1. The Division of Mechanical and Electrical Engineering.
   2. The Division of Civil and Irrigation Engineering.
   3. The Division of Mining Engineering.

IV. *The College of Education—*
   1. The State Normal School.
   2. Secondary Education.
      (a) The University High School.

Military Science and Tactics.

The Summer School.

Non-resident Instruction.
   1. Division of Correspondence Study.
   2. Traveling Libraries.
   3. Lecture Courses.

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Government

The University is a State institution by a provision of the Constitution of Wyoming. It is supported by the State of Wyoming and by the United States, and is undenominational and non-partisan. Its government is vested in a Board of Trustees, appointed by the Governor of Wyoming, with the consent of the State Senate.

The Board of Trustees

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FRANK SUMNER BURRAGE, B. A.....*Secretary*

EXECUTIVE COMMITTEE

A. B. HAMILTON.....MARY B. DAVID.....W. S. INGRAM

MEMBERS

Appointed		*Term Expires*
1895	TIMOTHY F. BURKE, LL. B.	1919
1913	MARY B. DAVID	1919
1914	MARY N. BROOKS	1919
1911	W. S. INGHAM, B. A.	1921
1913	C. D. SPALDING	1921
1915	J. M. CAREY, LL. B.	1921
1911	ALEXANDER B. HAMILTON, M. D.	1923
1911	LYMAN H. BROOKS	1923
1913	CHARLES S. BEACH, B. S.	1923
	EDITH K. O. CLARK, State Superintendent of Public Instruction	*Ex officio*
	ACTING PRESIDENT AVEN NELSON, A. M., Ph. D.	*Ex officio*

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The Faculty of the University of Wyoming

*CLYDE AUGUSTUS DUNIWAY, A. M. *(Cornell)*; Ph. D. *(Harvard)*; LL. D. *(Denver and Colorado)*.
President and Professor of History.

AVEN NELSON, A. M. *(Harvard)*; Ph. D. *(Denver)*.
Acting President, Professor of Botany and Curator of Rocky Mountain Herbarium.

JUSTUS FREELAND SOULE, A. M. *(Hobart)*.
Professor of Greek and Latin.

HENRY MERZ, M. A. *(Blackburn)*.
Professor-Emeritus of German and French.

CHARLES BASCOM RIDGAWAY, A. M., Sc. D. *(Dickinson)*.
Professor of Mathematics.

†HENRY GRANGER KNIGHT, M. A. *(Washington)*; Ph. D. *(Illinois)*.
Dean of the College of Agriculture,
Director of the Experiment Station, and
Professor of Agricultural Chemistry.

JUNE E. DOWNEY, M. A., Ph. D. *(Chicago)*.
Professor of Philosophy and Psychology.

GRACE RAYMOND HEBARD, M. A. *(Iowa)*; Ph. D. *(Illinois Wesleyan)*.
Professor of Political Economy and Librarian.

ELMER GEORGE HOEFER, M. E. *(Wisconsin)*.
Professor of Mechanical and Electrical Engineering.

JOHN CONRAD FITTERER, C. E. *(Colorado)*.
Professor of Civil and Irrigation Engineering.

ARTHUR EMMONS BELLIS, M. S. *(Michigan)*.
Professor of Physics.

ALPHEUS DAVIS FAVILLE, M. S. *(Wisconsin)*.
Dean of the College of Agriculture,
Director of the Experiment Station,
Professor of Animal Husbandry, and
Station Husbandman.

‡JOHN A. HILL, B. S. *(Wyoming)*.
Wool Specialist, and Professor of Textile Industry.

§THOMAS S. PARSONS, M. S. *(South Dakota)*.
Professor of Agronomy, and Station Agronomist.

*Resigned September 1, 1917.
†Resigned February 1, 1918.
‡Absent on leave in military service, Captain 166th Depot Brigade, United States National Army.
§Absent on leave Sept. 1, 1917 -July 1, 1918.

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*JOHN OSCAR CREAGER, M. A. *(Yale).*
Dean of the College of Education, and Professor of Education.

ALBERT C. BOYLE, Jr., M. E. *(Utah);* A. M., Ph. D. *(Columbia).*
Professor of Mining Engineering.

†ROSS B. MOUDY, M. S. *(Wyoming).*
Professor of Chemistry and State Chemist.

EMELINE STORM WHITCOMB, B. S. *(Columbia).*
Professor of Home Economics.

BEVERLY C. DALY, Captain, U. S. A., Retired.
Professor of Military Science and Tactics.

CARL EBEN STROMQUIST, Ph. D. *(Yale).*
Professor of Mathematics.

SYLVESTER K. LOY, Ph. D. *(Johns Hopkins).*
Professor of Chemistry.

RAYMOND BURNETTE PEASE, A. M. *(Harvard).*
Professor of English.

JULIAN EDWARD BUTTERWORTH, M. A., Ph. D. *(Iowa).*
Acting Dean of the College of Education and Professor of Secondary Education.

JOHN WILLIAM SCOTT, A. M. *(Missouri);* Ph. D. *(Chicago).*
Professor of Zoology and Research Parasitologist.

HARRISON C. DALE, A. M. *(Harvard).*
Professor of Political Science and Director of Correspondence Study.

E. H. LEHNERT, D. V. S. *(McGill).*
Professor of Veterinary Science, and Station Veterinarian.

HARVEY L. EBY, A. B. *(Yale).*
Professor of Rural Education.

EARL KILBURN KLINE, M. A. *(Oxford).*
Professor of Modern Languages.

RUTH ADSIT.
Professor of Elementary Education, and Supervisor of the Training Grade School.

E. DEANE HUNTON, M. B. A. *(Harvard).*
Professor of Commercial Subjects.

LAURA A. WHITE, A. M. *(Nebraska);* Ph. D. *(Chicago).*
Professor of History.

‡SAMUEL HOWELL KNIGHT, M. A. *(Columbia).*
Professor of Geology and Curator of the Museum.

*Resigned July 1, 1917, to become Commissioner of Education of the State of Wyoming.
†Gives no instruction; fully employed as State Chemist.
‡Absent on leave in military service. First Lieutenant, Intelligence Division, United States National Army.

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*ALBERT LUKKEN, B. A. *(Fremont, Nebraska, Normal)*
Director of the Department of Music and Professor in Vocal Music.

JAMES R. COXEN, B. S. *(Kansas State Agricultural College).*
State Director for Vocational Education, and Professor of Industrial Education.

KARL T. STEIK, A. M. *(Harvard).*
Associate Professor of Chemistry and Engineering Chemist.

ALONZO F. VASS, M. S. *(Wisconsin);* Ph. D. *(Cornell).*
Associate Professor of Agronomy, and Associate Agronomist.

EMMA HOWELL KNIGHT, B. A. *(Wyoming).*
Assistant Professor of Home Economics, and Adviser of Women.

FRANK SUMNER BURRAGE, B. A. *(Trinity).*
Secretary of the Board of Trustees, Registrar and Secretary to the President.

RALPH E. BERRY, B. L. *(California).*
Assistant Professor of Commerce.

JOHN CORBETT, A. B. *(Harvard);* M. Ped. *(Ohio State).*
Director of Physical Training.

JAMES F. GROVES, S. M., Ph. D. *(Chicago).*
Assistant Professor of Biology.

WILBUR A. HITCHCOCK, C. E. *(Colorado).*
Assistant Professor of Engineering.

CLARA FRANCES McINTYRE, A. M. *(Columbia).*
Assistant Professor of English.

MABEL LOUISE ANDERSON, M. A. *(Iowa).*
Assistant Professor in the Teaching of English.

ROSE LENA RUEGNITZ, Mus. Grad. *(Northwestern).*
Assistant Professor of Music and Instructor in Piano.

JOHN LUKKEN, B. S. *(Fremont, Nebraska, Normal).*
Acting Director of the Department of Music and Instructor in Voice.

ROBERT J. COWPER.
Instructor in Shop Work.

MABELLE A. LAND DE KAY, B. A. *(Wyoming).*
Instructor in English.

†KATHERINE E. NENNO, B. A. *(Wyoming).*
Instructor in Geography and Arithmetic.

‡ROGER C. FRISBIE.
Instructor in Organ and Piano.

*Absent on leave, second semester, 1917-18.
†Resigned Sept. 1, 1917.
‡Absent on leave since January 1, 1918, in military service. (Officers' Training Camp.)

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*EDGAR THOMPSON SMITH, B. S. *(Pennsylvania State).*
Instructor in Mechanical and Electrical Engineering.

AMY GUNNELL ABBOT, B. A. *(Wyoming).*
Instructor in English.

†LULU A. CONDRON, B. S. *(Washington).*
Instructor in Home Economics.

MABELLE RAE McVEIGH, A. B. *(Nebraska).*
Instructor in Latin and German.

HELEN MAYER.
Instructor in Violin.

MORNA ALMA WOOD.
Assistant Adviser of Women.

‡GINO VINCENT MEDICI DE SOLENNI, M. A. *(Ohio State).*
Instructor in Modern Languages.

MARY E. SMITH, Ph. B. *(Ottawa).*
Assistant Librarian.

KATHARINE A. WALLER, B. S. *(Teachers College, Columbia).*
Instructor in Home Economics.

AMANDA E. CLEMENT.
Instructor in Physical Training for Women.

EARL C. O'ROKE, A. M. *(Kansas).*
Instructor in Zoology and Assistant in Parasitology.

ARTHUR C. CROSS, A. M. *(Michigan).*
Principal of The University High School, and Instructor in History.

JOHN I. HARDY, M. S. A. *(Tennessee);* Ph. D. *(Missouri).*
Assistant Wool Specialist.

H. M. MARTIN, V. M. D. *(Pennsylvania).*
Instructor in Veterinary Science and Assistant in Animal Diseases.

CHARLES T. LATIMER, A. B. *(Colorado College).*
Instructor in Modern Languages.

AMY GARDNER, B. A. *(Colorado).*
Instructor in Drawing in The University Training School.

§HETTIE G. McCONNAUGHY, B. A. *(Smith).*
Instructor in The Junior High School.

MARGARET HARDEN BELLIS, B. A. *(Wyoming).*
Instructor in The Junior High School.

*Resigned Sept. 1, 1917. In military service. Captain Engineers, Reserve Corps, United States Army.
†Resigned January 1, 1918.
‡Resigned Sept. 1, 1917. In military service. Second Lieutenant, Infantry Reserve Corps, Intelligence Division, United States National Army.
§Resigned February 1, 1918.

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BEATRICE THOMSON.
Instructor in Home Economics.

CADY KENNEY.
Instructor in Organ and Piano.

LAVINA STEWART, A. B. *(Carroll).*
Cataloguer in University Library.

MARION V. HIGGINS.
Assistant in Agricultural Library.

FRANK EDGAR HEPNER, M. S. *(South Dakota).*
Research Chemist.

O. A. BEATH, M. A. *(Wisconsin).*
Research Chemist.

ALBERT E. BOWMAN, B. S. *(Utah Agricultural College).*
Director of Extension Work in Agriculture and Home Economics, and Extension Professor of Agriculture.

IVAN L. HOBSON, B. S. *(Utah Agricultural College).*
State Leader of Boys' and Girls' Club Work.

EPHRAIM F. BURTON, B. S. *(Utah Agricultural College).*
State Demonstrator in Dairying.

R. S. BESSE, B. S. *(Missouri).*
State Leader of County Agricultural Agent Work.

HENRIETTA KOLSHORN, B. S. *(Columbia).*
State Leader of County Home Demonstration Agent Work.

MARY W. McFARLANE, M. S. *(Oregon Agricultural College).*
State Demonstrator in Home Economics.

J. D. McVEAN, B. S. *(Pennsylvania State).*
State Specialist in Animal Husbandry.

*MARY HOOVER, B. S. *(Kansas State Agricultural College).*
Assistant State Leader of Club Work.

PAUL H. DUPERTUIS, B. S. *(Washington State College).*
Assistant State Leader of Club Work.

FRANK P. LANE, B. S. *(Oklahoma A. and M. College).*
Assistant State Leader of County Agent Work.

KATHERINE E. DOLBEAR, M. S. *(Clark).*
Assistant State Leader of Club Work.

EMILY A. LINHOFF.
Assistant State Leader of Club Work.

RAY T. JACKSON.
Specialist in Rodent Control Work, U. S. D. A.

C. E. BARTHOLOMEW.
Specialist in Apiculture, U. S. D. A.

N. E. LUCE.
Specialist in Poultry Work, U. S. D. A.

*Resigned January 1, 1918.

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ALLYN H. TEDMON, B. S. *(Colorado Agricultural College).*
County Agricultural Agent, Big Horn County.

*SAMUEL M. FULLER, B. S. *(Wyoming).*
County Agricultural Agent, Sheridan County.

W. R. REEVES, B. S. *(Kansas State Agricultural College).*
County Agricultural Agent, Crook County.

B. S. TEDMON, Jr., B. S. *(Colorado Agricultural College).*
County Agricultural Agent, Platte County.

J. A. HELMREICH, B. S. *(Missouri).*
County Agricultural Agent, Goshen County.

†JOHN E. WATT, D. V. M., M. S. *(Oregon Agricultural College).*
County Agricultural Agent, Lincoln County.

‡R. E. REYNOLDS, M. S. *(Oregon Agricultural College).*
County Agricultural Agent, Laramie County.

§LEO L. LAYTHE, B. S. *(Oregon Agricultural College).*
County Agricultural Agent, Park County.

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County Agricultural Agent, Campbell County.

M. B. BOISSEVAIN, B. S. *(Washington State College).*
County Agricultural Agent, Fremont County.

GEORGE F. HOLMSTEAD, B. S. *(Utah Agricultural College).*
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‖VERNE STEWARD, B. S. *(Michigan Agricultural College).*
County Agricultural Agent, Albany County.

JOHN C. HAYS, M. S. *(Wisconsin).*
County Agricultural Agent, Natrona County.

EARLE G. REED.
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County Agricultural Agent, Niobrara County.

¶C. L. JAMISON, B. S. *(Oregon Agricultural College).*
County Agricultural Agent, Johnson County.

A. F. SCOTT, B. S. *(Iowa State College).*
County Agricultural Agent, Converse County.

H. J. THOMAS, B. S. *(Colorado Agricultural College).*
County Agricultural Agent, Sheridan County.

LEW P. REEVE, B. S. *(Iowa State College).*
Assistant County Agent in Charge, Uinta County.

*Resigned February 1, 1918.
†Resigned August 8, 1917.
‡Resigned March 1, 1918.
§Resigned December 20, 1917.
‖Resigned March 13, 1918.
¶Resigned March 1, 1918.

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PHILIP B. MILES, B. S. *(Colorado Agricultural College).*
Assistant County Agent, Fremont County.

HOWARD W. ALDRICH, B. S. *(Iowa State College).*
Assistant County Agent, Campbell County.

*A. E. WEBB, B. S. *(Oklahoma A. and M. College).*
County Club Leader, Sheridan County.

L. A. MARKS, B. S. *(Connecticut Agricultural College).*
County Club Leader, Sheridan County.

HARRISON WALN, B. A. *(Fremont).*
District Club Leader, Wheatland, Platte County.

LAURA I. WINTER.
County Home Demonstration Agent, Lincoln County.

KATHARINE E. BENNITT, B. S. in H. E. *(Wyoming).*
County Home Demonstration Agent, Laramie County.

MARGUERITE ALLEN, B. S. *(Idaho).*
County Home Demonstration Agent, Platte County.

NELLE E. HUFF, B. S. in H. E. *(Wyoming).*
County Home Demonstration Agent, Big Horn County.

CRITIC TEACHERS IN THE ELEMENTARY TRAINING SCHOOL

CLARA H. PRAHL, B. Ped., B. A. *(Wyoming).*
ANNA RICE, B. Ped. *(Wyoming).*
EUGENIA M. NEER.
MARY HOLLENBACK, B. S. in H. E. *(Wyoming).*
MARGARET MULLISON.

EDWIN N. HITCHCOCK, B. A. *(Wyoming).*
Instructor in Manual Training.

CRITIC TEACHER IN THE RURAL TRAINING SCHOOL

RUTH C. STOUT.

STUDENT ASSISTANTS

AGRONOMY—*Leslie Crawford* (February to June).
BOTANY—*Wright L. Hess* (December to June).
CHEMISTRY—(College): *Marshall Feris* (September to January); *Arthur Wichmann* (January to June); *Oscar Larson.* (Station): *Harry W. Titus.*
EDUCATION—Elementary, *Ursula D. Tanner;* Rural, *Morna A. Wood;* History, *Dorothy Downey.*
ENGLISH—*Mrs. R. C. Lauk* (January to June).
HOME ECONOMICS—*Vernetta Stager.*
MANUAL TRAINING—*D. R. Lustgarten* (January to June).

*Resigned March 3, 1918.

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METEOROLOGY—*Albert M. Day.*
MINING—*Arthur Wichmann* (September to January); *Terry K. Biglow* (January to June); *Elizabeth Steele.*
MUSEUM—*Art. G. Burckert.*
PHYSICS—*Henry Bray* (September to December); *Archie Heigert* (January to June).
PSYCHOLOGY—*Ben Appleby.*
VETERINARY SCIENCE—*W. L. Hess* (September to December); *Glen Hartman* (December to February); *Albert M. Day* (February to June).
WOOL—*Neal Boyd.*
ZOOLOGY—*Walter D. Perry.*

EMPLOYES

IDA J. MOEN—*Assistant Registrar and Stenographer, University Office.*
C. D. MOIR—*Clerk to Director* (to July, 1917); C. D. SPARWASSER (July-February, 1918); FRANK LONG (beginning February, 1918).
THOS. J. DODDS—*Bookkeeper, University Office* (to May, 1917); ELWOOD P. JOHNSON (beginning May, 1917).
FRED C. LEBHART—*Stenographer, University Office* (to December, 1917); ELSA H. FRIEBEL (beginning January, 1918).
STEWART LAMB—*Clerk, Division of Extension* (to November, 1917); FRED C. LEBHART (beginning December, 1917).
ALICE L. HARWOOD—*Registrar's Clerk, University Office.*
ESTHER E. JOHNSON—*Stenographer, Division of Extension* (to November, 1917).
VIRGINIA MILLER—*Stenographer, Division of Extension* (beginning July, 1917).
EDITH WILSON—*Stenographer, Division of Extension* (beginning August, 1917).
EDNA PETERSON—*Stenographer, Division of Extension* (beginning July, 1917).
ALICE JAMIESON—*Stenographer, College of Education* (to September, 1917); ETHYLE BOGGS (September to January); MABEL KEEFE (January to April, 1918); FLORENCE RISSER (beginning April, 1918).
JOHN PRAHL—*Head Janitor.* RUSSELL SHOLL; ROGER COTTLE (September to November); ARTHUR NELSON (September to December); ARTHUR MUNDELL (September to November); PAUL SCHLOSSER (December to June); CHARLES C. YOUNG (January to June); JULIUS C. GALLIGAR (December to June).
WILLIAM ZELLER—*Gardener* (beginning March, 1918).
SAM MAJURY—*Dairy Superintendent* (to October, 1917); EVAN A. ROSS (beginning March, 1918).

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STUDENT EMPLOYES

Correspondence Study—Stenographer, RALPH E. McWHINNIE.
Experiment Station Library—EDITH M. STIRLING; CHARLES C. YOUNG (September to December); GEO. GRANT (January to April).
Library Stenographer—EDITH M. STIRLING.
Summer—EUGENIA M. BROWN.
Semesters—HANNAH WILSON (September to January); NELLIE POTTS (January to June); CHARLES C. YOUNG.
Office—RICHARD BUTLER (January to June).

OFFICERS OF THE FACULTY

Chairman—PRESIDENT OF THE UNIVERSITY
Secretary—JUSTUS F. SOULE
Registrar—F. S. BURRAGE

STANDING COMMITTEES OF THE FACULTY
1917-18

The President is a member of all Committees.
COMMITTEE ON COMMITTEES—Ridgaway, Soule, Bellis.
ADVISORY COMMITTEES—
College of Liberal Arts—Soule, Bellis, Ridgaway, Hebard.
College of Agriculture—Dean Knight, Faville, Vass.
College of Engineering—Fitterer, Boyle, Hoefer.
College of Education—Butterworth, Adsit, Eby, Cross.
Department of Home Economics—Whitcomb, Waller, Condron.
Department of Music—Lukken, Ruegnitz, Mayer, Frisbie.
University High School—Cross, Stromquist, McVeigh, Anderson.
Athletics—
MEN—Soule, Burrage, Steik, Bellis, Corbett.
WOMEN—Mrs. Knight, Clement, Adsit, Neer.
Commencement Exercises—Ridgaway, Lukken, Hebard.
Entertainments—Hunton, Mrs. Knight, Faville, White.
Governing Council—
College—Downey, Pease, Mrs. Knight.
Preparatory—Stromquist, Cross, Abbot.
Graduation—Boyle, Burrage, Stromquist.
Graduate Students—Scott, Downey, White, Loy.
Library—Hebard, Pease, Groves.
Program—Loy, Fitterer, Kline, Lehnert, S. H. Knight.
Student Publications—Pease, Burrage, McIntyre.
University Exhibits—Faville, Boyle, Adsit, Hardy, Groves.
University Extension—Dale, Butterworth, Downey, Bowman, Stromquist, Hitchcock.

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THE AGRICULTURAL EXPERIMENT STATION OF THE UNIVERSITY OF WYOMING

*C. A. DUNIWAY, Ph. D., LL. D.----------*President*
AVEN NELSON, A. M., Ph. D.----------
----------*Acting President, and Botanist and Horticulturist*
†HENRY G. KNIGHT, A. M., Ph. D.----------*Director and Chemist*
A. D. FAVILLE, M. S.----------*Director and Animal Husbandman*
F. S. BURRAGE, B. A.----------*Secretary*
J. C. FITTERER, C. E.----------*Irrigation Engineer*
‡T. S. PARSONS, M. S.----------*Agronomist*
J. W. SCOTT, Ph. D.----------*Parasitologist*
E. H. LEHNERT, M. D. V.----------*Veterinarian*
KARL T. STEIK, A. M.----------*Engineering Chemist*
A. F. VASS, M. S., Ph. D.----------*Associate Agronomist*
F. E. HEPNER, M. S.----------*Research Chemist*
O. A. BEATH, M. A.----------*Research Chemist*
EARL C. O'ROKE, A. M.----------*Assistant in Parasitology*
J. I. HARDY, M. S. A., Ph. D.----------*Assistant Wool Specialist*
H. M. MARTIN, V. M. D.----------*Assistant in Animal Diseases*
FRANK LONG----------*Clerk*

*Resigned September 1, 1917.
†Resigned February 1, 1918.
‡ On leave September 1, 1917 -July 1, 1918.

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The University History

The initiatory step towards the establishment of a University in Wyoming dates from the Act of Congress approved February 18, 1881, entitled "An act to grant lands to Dakota, Montana, Arizona, Idaho and Wyoming for University purposes." This act gave to the Territory seventy-two sections, or 46,080 acres of land to be selected from the vacant Government lands within the boundaries of Wyoming. By legislative enactment in 1886 the Governor of the Territory was authorized to appoint a commission of one to make these selections. In that year F. O. Sawin was appointed upon this commission and ultimately selected 45,291 acres. Later selections brought the total of the grant to 46,091.34 acres. The revenues from the leasing of these lands are received by the University authorities biennially.

This was Wyoming's first step toward her State University. The Ninth Territorial Legislature passed an act (March 4, 1886) authorizing formal action toward the organization of a University. This law provided for an income for current expenses by an annual tax of one-fourth of a mill on all taxable property in the Territory. The law authorized the establishment of an institution "under the name and style 'The University of Wyoming,' to be located in or near the city of Laramie" to impart to "young men and women, on equal terms, a liberal education and thorough knowledge of the different branches of literature, the arts and sciences, with their varied applications." The government of the institution was vested in a board of seven trustees, "three of whom shall at all times be residents of the City of Laramie." Hon. Stephen W. Downey was the father of this bill. Under the provisions of this law the Governor of the Territory, Hon. Francis E. Warren appointed a Building Commission to have charge of the construction of a University building. This commission consisted of John W. Donnellan, LeRoy

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Grant and Robert Marsh. They selected a site consisting of twenty acres, which was procured partly from Laramie and partly by purchase and donation from the Union Pacific Railroad. By the summer of 1887 a portion of the building was completed and known as the Liberal Arts building. This justified the opening of the University in the fall. The entire edifice was not completed until 1890. This structure cost more than $100,000.00.

The first Board of Trustees consisted of the following men: J. H. Finfrock, M. D.; J. H. Hayford, M. D.; Edward Ivinson;. J. Y. Cowhick, D. D.; L. D. Ricketts, Ph. D.; W. H. Holliday and M. C. Brown. The Board held its first recorded meeting in the office of Hon. M. C. Brown, August 26, 1886, and organized as follows: J. H. Finfrock, President; J. H. Hayford, Secretary; Edward Ivinson, Treasurer. The first session of the University began in the fall of 1887.

The State Constitution, as presented by the Constitutional Convention, September 30, 1889, and adopted by the people of the Territory at a general election, held November 5, 1889, devotes Section 15 of Article VII to the University, making it "equally open to students of both sexes, irrespective of race or color." The first State Legislature passed an act, approved January 10, 1891, changing the membership of the Board of Trustees from seven to nine members, making the President of the University and the State Superintendent of Public Instruction ex-officio members. Under the new legislation there was an entire change in the membership of the Board of Trustees. This Board held its first meeting in February, 1891, when Hon. S. W. Downey was elected President of the Board, Grace Raymond Hebard, Secretary, and Frederick E. Scrymser, Treasurer. Mr. Downey continued in this office until February, 1897, and the Secretary until June 30, 1908.

By this enactment of January 10, 1891, the annual income tax was reduced from one-fourth of a mill to one-eighth. This tax was raised by the Legislature of 1905 to

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three-eighths of a mill, and by the Legislature of 1909 to one-half of a mill (but limited to $33,000 annually). In 1911 the amount raised by the one-half mill tax was limited to $85,000. The Legislature of 1913 fixed the tax at three-eighths of a mill. In 1915 an additional permanent building tax of one-eighth of a mill was voted.

In addition to State aid received from mill taxes and various appropriations for special purposes, and the sums derived from rental of lands, the University receives additional assistance from the Federal Government. The first State Legislature, by the Act of 1891, assented to the terms and conditions of the Morrill Act of August 3, 1890, granting to agricultural colleges more complete endowment and support, and also to the Hatch Act of March 2, 1887, for the support of experiment stations. The original Act of Congress in regard to agricultural colleges was enacted July 2, 1862, in aid of the establishment and maintenance of colleges of agriculture and the mechanic arts. This act made it possible for Wyoming to select 90,000 acres of Government land, to be used for the support of the Agricultural College, the selection, leasing and sale of which are identical with those called "University lands." By the organic law of the State these lands may not be sold for less than $10.00 an acre. The University has received Federal appropriations since the fiscal year ending June 30, 1891, from the Morrill Fund, and also since June 30, 1891, from the Hatch Fund. Additional aid was given to the Agricultural College by the Nelson Act of 1907, and to the Experiment Station by the Act of Congress of 1906, called the Adams Act. By legislation of 1915, the University is to receive one-fourth of the income of 200,000 acres of land granted to the state for "charitable, educational, penal and reformatory institutions." The Smith-Lever Act for extension work in Agriculture and Home Economics gives to the Agricultural College an annual Federal appropriation which will gradually increase to $15,400 in 1920. State appropriations were also granted in 1915 for co-operative state and county extension work.

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General Information

LOCATION

The University is located at Laramie, a town of about 7,000 inhabitants, on the main line of the Union Pacific Railroad. The Laramie plains constitute a table land, protected by encircling mountains, some of which are snow-capped throughout the year. Laramie, on the eastern border of these plains, by reason of the protection thus afforded, has a mountain climate which is ideal throughout most of the year and rarely severe even in the worst winters. The invigorating air, the splendid sunshine, the abundance of pure sparkling water from the nearby mountain springs, make the location of the University a fortunate one. The town has many elements of beauty, is remarkably clean both physically and morally and has many of the advantages and conveniences of a city. An efficient school system, a well supported county library, beautiful homes and public buildings, attractive stores and well equipped splendid churches make Laramie most desirable as a place of residence for those who seek the advantages of college and university life.

GROUNDS AND BUILDINGS

The campus, on the eastern border of the town, about half a mile from the railroad station, now contains approximately fifty-four acres and is gradually being graded and ornamented with flowers, shrubs, and trees. With the extension of the system of walks and drives, the grounds are taking on the aspect of the traditional college campus.

THE LIBERAL ARTS BUILDING

The first building to be erected on the campus was the Liberal Arts Building, costing more than $100,000.00. It faces west and is about 150 feet in length and 50 feet in

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breadth, having three stories and a commodious garret and store-room, besides a basement. The material used in its construction is native sandstone. The Auditorium in the second story will seat about four hundred people.

THE MECHANICAL BUILDING

A second building, costing $12,000, was completed in the spring of 1893 for the College of Mechanical Engineering. A large wing was added in the summer of 1897. The Mechanical Building is constructed of the same material as the Liberal Arts Building. A wing of the Mechanical Building has been fitted up as an assaying laboratory for the use of the Division of Mining Engineering. About $20,000 has been spent in equipping the building with tools and machinery.

THE HALL OF SCIENCE

A third building, known as the Hall of Science, was completed in 1902. The building has been so planned that wings may be added, as more rooms shall be needed. The portion of the building already constructed is 50x80 feet, with a two-story extension on the rear, and cost $39,000. The general style of the building is the Collegiate Gothic. The material used is the same gray sandstone as in the other buildings, which is to be found in the hills near Laramie.

The lower floor is occupied by the Museum. The second floor of the building is devoted mainly to botany and includes a large laboratory, herbarium rooms, and class room. On the east side of the building, opening from the second floor, there is a lecture room, seating over 100 persons. This is arranged in amphitheatre style, so that every seat affords a view of the demonstration tables. The third floor has been fitted up for the Division of Mining Engineering and is now occupied by it.

THE CENTRAL HEATING PLANT

Both for the sake of economy and for greater safety, a general heating plant has been installed near the center of

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the campus at a cost of $16,000. All buildings on the University grounds are heated from this one plant.

THE GYMNASIUM

The Gymnasium and Armory was erected in the summer of 1903 at a cost of $15,000. It is a brick structure, with stone trimmings. The main floor, covering a space of 45x90 feet, is available for company drill and team work. A running track, suspended from the ceiling, also answers the purpose of a gallery. The basement of the building, consisting of seven rooms, is fitted up for office, bath rooms, and armory. The apartments for women are entirely separate from those for men. The Gymnasium is also used as an entertainment hall for social gatherings.

THE EXPERIMENT STATION AND FARMS

The Agricultural Experiment Station has several barns on each of the Experimental Farms.

In September, 1902, the University received possession of the old penitentiary property, one-half mile west of Laramie, consisting of 320 acres, and converted it into a stock farm for the Agricultural College. The old Experiment Farm, consisting of 120 acres, situated on the Pioneer Canal, about two miles west of Laramie, is used as the Agronomy Farm. Adjoining this latter farm the University has 640 acres of bench land, available for experiments and demonstrations in dry farming.

The Legislature of 1907 transferred the old penitentiary property to the University and appropriated $5,000 to repair and equip it.

The Legislature of 1909 appropriated $8,000 for the construction of new and modern barns upon the Experiment Farms.

A concrete silo with a capacity of 150 tons was added to the equipment of the stock farm in 1913.

THE WOMEN'S HALL

The Legislature of 1907 appropriated $25,000 for a Women's Hall to serve as a residence hall for women students

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and also to provide laboratories for the Department of Home Economics. This portion of the building was completed in October, 1908. The original plans provided that the building should have an extension, for the building of which the Legislature of 1909 appropriated $15,000. This addition was completed during the following summer. The building affords living rooms for approximately fifty women students, together with a suite of rooms for the Adviser of Women, reception rooms, kitchen, dining rooms, laundry, etc., as well as the laboratories for the Department of Home Economics.

THE NORMAL SCHOOL BUILDING

The Legislature of 1909 appropriated $50,000 for the construction of a building to be used by the Normal School of the University. This building was completed August 1, 1910. It is built of Indiana Bedford stone, is modern in every regard, and contains recitation rooms for the Normal School, together with the Training Schools for Teachers.

THE AGRICULTURAL HALL

Plans and specifications were adopted in 1912 by the Board of Trustees for a new Agricultural Hall, which was completed in September, 1914. The building has three floors and a well lighted basement, and cost over $100,000. It provides needed quarters of modern type, not only for all departments of the Agricultural College and Experiment Station, but also for the Department of Chemistry, the Department of Zoology, the State Chemist, the Department of Civil and Irrigation Engineering, and the Extension Division in Agriculture and Home Economics.

HOYT HALL

The Board of Trustees, at its annual meeting held in June, 1915, adopted plans for a large new Women's Dormitory. At the meeting of the Executive Committee held in August of the same year, contracts were let for the construction of one unit of this building. This portion of the building, finished in June, 1916, will comfortably accom-

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modate forty or more young women. The building harmonizes in style of architecture with Women's Hall but it is built of Bedford, Indiana, stone and gray pressed brick, with terra cotta trimming. It has a basement and three stories. It is thoroughly fire proof, the staircases being of steel, the floors of cement, and all partition walls of gypsum tile. The interior trim is of hard oak. In honor of the first President of the University, Dr. J. W. Hoyt, the building was named Hoyt Hall.

THE UNIVERSITY LIBRARY

The University Library is for the use of the whole University. Its privileges are also granted under special regulations to persons not connected with the University.

The general control and oversight of the Library are committed to the Faculty Committee on Library, consisting of the President of the University, and three members of the Faculty.

It is the duty of the Committee to make rules for the administration of the Library, and to direct the purchase of books to the extent of the funds applicable to that purpose.

The care and custody of the Library devolves upon the Librarian, whose duty it is to superintend its internal administration, enforce the rules, conduct the correspondence, and make annually a written report on the condition of the Library.

The Library, which includes the general reading room of the University, is situated on the first floor and in the basement in the north wing of the Liberal Arts Building.

During six days of the week students have access to books and periodicals, under a limited open shelf system. Three volumes may be taken by any one individual and kept from the shelves for a period of two weeks. Books reserved at the instance of professors as collateral reading for their courses are shelved in their respective rooms, and can be

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taken out only on application to such professors, who are responsible for them during the period of their reservation.

The Library contains over 41,000 bound volumes, and, in addition, many thousand unbound bulletins and reports.

Many scientific books as purchased, after being catalogued, are placed in the reference libraries in the several laboratories in the University. Books for more general use are placed in the main Library. The Agricultural Library is separate from the regular Library, being housed in Agricultural Hall. Special shelves in the reading room are kept filled by the Librarian with the more recent and timely books deserving the attention of the students. Scientific and general periodicals to the number of about 200 are taken by the Library.

Some fifty agricultural papers are sent to the University, and most of the newspapers published in Wyoming are donated by the publishers.

The University uses the Dewey decimal card catalogue system and, in addition to the regular cards, has those coming from the Department of Agriculture at Washington, containing a complete list of publications sent from that department and its several branches in connection with the work of the Agricultural Experiment Station.

THE GEOLOGICAL AND PALEONTOLOGICAL MUSEUM

The University has, for a number of years, sent small summer field parties throughout various regions of the State for the purpose of geological and paleontological research. While this work is necessarily expensive and the available funds are limited, nevertheless these parties have succeeded in finding and bringing together an interesting and valuable collection of fossil material. This material consists for the most part of Mesozoic reptilian remains from the Upper Jurassic and the Lower Cretacic formations. A number of type representatives of the aquatic orders Sauropterygia and Ichthyopterygia have been found and placed on display. The Cretacic land living reptiles

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are represented by a number of partial skeletons and individual bones of the order Dinosauria. Wyoming is one of the richest burying grounds in the world of these great reptiles and it is the object of the University to build up as extensive a collection of them as possible. Considerable mammal material has been collected from time to time, especially from formations of the Oligocenic age. A complete skeleton of a small camel, Eotylopus, and some Titanothere skulls have been placed on display. One of the most valuable collections in the museum is a display of Cycads, from the Freezeout Hills, Carbon County. This display consists of twenty species of the genus Cycadella, and it is the third largest Cycad collection in the United States. Extensive invertebrate collections have been made from practically all the marine formations of the State. This material includes the index forms from the various horizons. It is being arranged so that it can be consulted and studied at any time.

The museum is primarily of a geological and paleontological nature, but it also contains important natural history and historical collections, some of which have been donated by citizens of the State. The most important collections of this nature are; a collection of bird skins, representing the birds of Wyoming; a collection of insects; a collection of marine fish, donated by the United States National Museum; a collection of mammal heads donated by Mr. J. A. Fischer; a collection of heads and Indian relics loaned by Mrs. Bartlett Richards. Other donations of a miscellaneous nature have been received from time to time.

Any persons knowing the location of fossil remains would confer a favor upon science and upon the University if they would make known the nature of their finds to the Curator of the Museum, University of Wyoming, Laramie, Wyoming.

THE ROCKY MOUNTAIN HERBARIUM

The Herbarium connected with this institution is the largest and most representative collection of the plants of

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the Rocky Mountains found in Western America. It now contains about 90,000 specimens. It is an excellent working collection of the plants of the western United States, being rich in those of the Rocky Mountains, and especially of Wyoming. A steady growth is maintained, collections being added each year. It represents the flora of Wyoming as far as known, and is becoming of more and more interest to students who desire to make a special study of the plants of this region, especially so since it contains the types of many new species recently described. A considerable part of the growth of the Herbarium is secured through the plants that are submitted for identification or verification by the institutions and collectors in adjacent states. Thousands of specimens have thus been added, among which have been found many of the new species. The Herbarium is open to University students and others whose previous training is such as to enable them to profit by its use. The Curator solicits correspondence from persons who have specimens that may be donated and from those who have plants for exchange, or who might be induced to collect for that purpose. Those who have collections which they desire named or verified are invited to send duplicate sets for this purpose. Address all communications to Professor Aven Nelson, Curator of the Rocky Mountain Herbarium, Laramie, Wyoming.

ENGINEERING MUSEUM

In addition to the facilities for experimental work afforded by the laboratories, the college has collected a large number of valuable models and samples from the leading manufacturers of the country for use in class room work and exhibition purposes. The collection includes samples of packing, belting, gaskets, hose, pipe covering, valves, forgings, carborundum products, electrical conduits, armature and field laminations, armature and field coils, wiring material, railway line material, high tension insulators, storage battery plates, fuses, carbon products, etc. Many of the models are in sections so that the interior workings

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may readily be seen. Among the sectioned models may be mentioned models of American steam pump, Cameron steam pump, Foster super-heater, Crosby muffled locomotive pop safety valve, Crosby iron standard stationary safety valve, three National water meters, four injectors, steam separator, five steam gages, Anderson steam trap, and various regulators, valves, etc. The Museum also contains a collection of obsolete electrical measuring instruments having an historical interest to engineering students. Material is continually being added, providing a collection that will prove of value to any one interested in engineering.

THE AGRICULTURAL MUSEUM

The University possesses a quantity of valuable prize material consisting of a collection of the seeds and plants of the cereal and forage crops, raised principally upon the Experiment Station Farms.

As mentioned elsewhere in the description of the University laboratories, the institution also possesses a very complete exhibit of wools and wool products, the gift of F. S. King Bros. Company of Laramie, Wyoming.

LABORATORIES AND SHOPS

The Laboratory of Mining and Mineralogy occupies rooms fitted up for this department, using all the third floor of Science Hall. Students have the use of the large Museum mentioned above. The State of Wyoming is particularly rich in Paleontological material.

Chemical Laboratories: The Chemical Department now occupies half of the second and the entire third floor of the new Agricultural Hall. This space is allotted to three kinds of work—student instruction, research and inspection.

Theoretical instruction is given in a spacious and well lighted lecture room on the second floor. This room is

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equipped with a large demonstration table, hood, water, gas, blackboards and other necessary appurtenances. A small room adjoining serves as a preparation and store room for such apparatus as is used in the lecture room from time to time. Practical instruction is given in the student laboratories occupying the third floor. The laboratory for general chemistry, which occupies a room 72x28 feet at the north end of this floor, is furnished with six double desks, each accommodating twenty-four students working in two sections. The desks are equipped with modern appliances, including individual hoods, open plumbing and an excellent ventilating system. Laboratories for analytical and organic chemistry have been equipped on the same floor.

The research division occupies the west central portion of the second floor, and comprises four rooms fully equipped for the extensive investigations which are being carried on by the several members of the Experiment Station staff.

The laboratories of the Wyoming State Dairy, Food and Oil Commissioner occupy the west central portion of the third floor. Here interested students are given the opportunity of becoming familiar with the details of food inspection.

Veterinary: This department is located in a suite of rooms on the second floor of Agricultural Hall. The student laboratory for work in Bacteriology and Pathology is well equipped both for class and research work. Exceptional facilities are offered for advanced research and investigational work.

Zoology and Physiology: This laboratory is now located on the second floor of Agricultural Hall. It is equipped with student tables, each having individual lockers, with supply and preparation tables, cases for microscopes and for type specimens and models; a series of aquaria for keeping and studying living animals; sinks, gas and electricity. There are also compound and simple microscopes, numerous charts, a large number of microscopic and lantern slides, as well as other apparatus necessary for good laboratory work. Connected with the Zoology Laboratory is a

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large store-room, an office, and a well equipped research laboratory for the Department of Parasitology.

Botany: The Department of Botany occupies the entire second floor of Science Hall. The laboratory is large and well adapted to the purpose for which it is used. The equipment includes the following: gas and water, modern compound microscopes, dissecting microscopes, sliding and rotary microtomes, turntables, water baths, charts, models, photographic cameras and materials, and numerous illustrative slides for the microscope and lantern. Connected with the laboratory are recitation rooms, a large lecture room (equipped with a lantern), an office, storage rooms, and the herbarium.

The Physical Laboratory has commodious quarters in the Liberal Arts building. The rooms are supplied with water, gas, electricity, and all the apparatus necessary for elementary and advanced work. A laboratory is also equipped for advanced work in electrical measurements and dynamo-electricity.

Psychology: This laboratory, located in the Liberal Arts building, is well equipped with the apparatus and materials necessary for experimentation in the courses of the department.

Agronomy: The new Agricultural Hall houses the Agronomy Department. A Soils Laboratory has been fitted up for work in soil physics and a large Agronomy Laboratory affords opportunity for work in grains and seeds.

Farm Mechanics Laboratory: A large room in Agricultural Hall is given over to Farm Mechanics work. Engines, farm implements, model silos, etc., have been donated or loaned by various companies for instruction in the courses in Farm Machinery and Farm Motors. These, with the machinery at the farms, offer excellent facilities for instructional work.

Animal Husbandry: Students electing work in Animal Husbandry find ample opportunities offered them for the study of various breeds of live stock. Horses, cattle of both

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the beef and dairy breeds, swine, and sheep representing all the leading "Down" and "Long Wool" classes are at the command of the agricultural students.

Wool Laboratory: The completion of the Agricultural Hall has given the wool department two laboratory rooms which are equipped for undergraduate and research students. The smaller room has been fitted up for the control of temperature and humidity in order to make possible the accurate measurement of the physical properties of the wool fibre, while in the larger room are three fibre testing machines, a conditioning oven, microscopes, a photomicrography apparatus and built-in tubs for the scouring of small wool samples. A very complete collection of wool samples, the gift of the F. S. King Bros. Company of Laramie, is utilized in laboratory and class work.

Dairy Laboratory: This Laboratory, maintained at the University Stock Farm, contains types of the more common apparatus used on modern dairy farms.

Engineering Laboratories: These laboratories and shops will be found described in the outline of the work of the College of Engineering.

SOCIETIES AND PUBLICATIONS

ASSOCIATED STUDENTS OF THE UNIVERSITY

This is an inclusive organization in which all students of the University have membership. Through its executive committee the association manages all general student activities.

LITERARY SOCIETIES

From time to time literary and debating clubs are maintained amongst the various classes and colleges of the University. These societies are occupied with the investigation and discussion of topics of public interest and in delivery of orations, speeches, etc. Intercollegiate debates are carried on with other institutions. Contests have been held

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with the University of Denver, Colorado Agricultural College, Colorado State Teachers College, and Utah Agricultural College.

"The Pen Pushers," a local society formed some years ago by students interested in gaining proficiency in writing, became in 1915 a chapter of the "American College Quill Club."

MUSICAL SOCIETIES

The University Orchestra, University Band, University Choral Union, Mandolin and Glee Clubs, both among the young men and young women, are organizations which keep up the general interest in music and furnish music for public exercises.

COLLEGE FRATERNITIES

There are five national fraternities, the Alpha Tau Omega and Sigma Alpha Epsilon, for men, the Pi Beta Phi, Delta Delta Delta, and Kappa Delta, for women. The Gamma Theta Chi is a local fraternity for men.

TECHNICAL SOCIETIES

The Agricultural Club is organized among the students of that college, for the reading and discussion of papers by the members.

The Engineering Club is composed of students from the several departments of the College of Engineering. Its members meet for discussion of problems of interest in their professional work.

In November, 1915, there was organized at the University the Delta chapter of the Phi Upsilon Omicron fraternity, a professional Home Economics society. The membership is made up of students of high standing in that Division.

RELIGIOUS SOCIETIES

Voluntary Christian influences make one of the helpful factors in maintaining a high moral standard in the University. The different churches of the city gladly encourage students to attend their meetings, including Sunday church services of the denomination to which they belong.

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The churches in Laramie are the Episcopal, Catholic, Methodist Episcopal, Presbyterian, Baptist, German Evangelical, Swedish Mission, English Lutheran and Christian Science.

The Young Women's Christian Association and the Young Men's Christian Association are open to members of the Faculty and students of all departments.

UNIVERSITY PUBLICATIONS

The University of Wyoming Bulletin is an official bimonthly issued in the interests of the entire University.

The Wyoming Farm Bulletin, successor to the *Ranchman's Reminder,* is a monthly issued by the Agricultural College.

The Experiment Station Bulletins are pamphlets setting forth the results of investigations made in that division.

Bulletins upon special subjects are issued from time to time by the members of the Faculties of the several Colleges and Departments.

STUDENT PUBLICATIONS

The Wyoming Student, a weekly paper containing news of the life in the University and the high schools of this State, is published under the control of the Associated Students, by an Editor and Business Manager elected by the students of the University. This paper affords an opportunity for students to acquire facility in writing for the press and practice in the practical details of newspaper management.

The Wyo, the Junior Annual, is issued annually by the Junior class.

SCHOLARSHIPS AND PRIZES

THE OXFORD SCHOLARSHIP

By the will of Cecil Rhodes, two continuing scholarships at Oxford University are assigned to each State in the United States, and the selection of the scholars from Wyo-

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ming has been placed in the hands of the President and Faculty of the University. Candidates must be below the age of twenty-five and must have completed at least the Sophomore year of a regular college course. Preference will be given to students who have been educated in the State. In the choice of candidates the wishes and intentions of the founder of the scholarships will be followed as closely as possible. The young men selected must be men of good moral character, interested in manly sports, and of exceptional promise and ability, as well as competent in their studies.

Qualifying examinations are held each year in October at the University, in Mathematics, Latin, and Greek. On account of the war no election was made in December, 1917, and in all probability none will be made in the fall of 1918.

The scholarships yield $1,500 a year for three years, and this is sufficient not only to maintain the student at some college of Oxford during the collegiate year, but also to enable him to travel and study on the Continent to some extent during vacations. High school principals and superintendents of schools would confer a great favor upon the young men of their communities by calling attention to the advantages offered to those who obtain these scholarships.

The following are Wyoming's Rhodes Scholars:

Harold G. Merriam, in Lincoln College, 1904-07.
Edward Noel Roberts, in Exeter College, 1910-13.
Esper Wayne Fitz, in Wadham College, 1911-14.
Frank Graham Swain, in Wadham College, 1913-16.
Seymour Sereno Sharp, in Exeter College, 1914-17.
Horace N. Wilcox, in St. John's College, 1917.

WEST POINT, ANNAPOLIS AND THE CIVIL SERVICE

In this connection it is well also to call the attention of students to the desirability of making plans for West

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Point and Annapolis appointments, and the numerous Civil Service examinations of the United States Government which are offered from time to time. Especial facilities for preparation for these examinations are afforded by the University.

University Scholarships

Scholarships are maintained in the University by the generosity of friends of the University. For the year 1917-18 these have been available as follows:

The Jones Scholarship of $100.00, by Mr. Arthur C. Jones, of Laramie, Wyoming.

The Jones Scholarship No. 2 of $100.00, by Mr. Arthur C. Jones, of Laramie.

The Joseph M. Carey Scholarship of $100.00, by Hon. Joseph M. Carey, of Cheyenne.

The Joseph M. Carey Scholarship No. 2, of $100.00, by Hon. Joseph M. Carey, of Cheyenne.

The John B. Kendrick Scholarship of $100.00, by Senator John B. Kendrick, of Sheridan.

Additional subscriptions have also been received for various scholarships as follows:

D. P. Smith & Son, Laramie	$100.00
Bishop N. S. Thomas, Cheyenne	100.00
Gem City Grocery Company, Laramie	100.00
Wm. Dubois, Cheyenne	50.00
Int. R. R. Light & Power Co., Laramie	100.00
Stock Growers' National Bank, Cheyenne	50.00
Hon. Robert H. Homer, Laramie	100.00
Laramie Republican Co.	100.00
Pacific Market Co., Laramie	100.00
Kemmerer Coal Company, Kemmerer	100.00
Anonymous, A Friend	100.00

Applications for Scholarships

Applications for University Scholarships should be made in writing to the President of the University, and should be received not later than June in each year. Awards will be

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made upon the basis of promise of usefulness, together with individual need of aid.

HOLDERS OF SCHOLARSHIPS

Scholarships during 1917-18 have been held by the following students:

Mr. Ben Appleby, Laramie, Wyoming.
Mr. Art Burckert, Buffalo, Wyoming.
Mr. F. Kelly Dukes, Saratoga, Wyoming.
Mr. Marshall Feris, Riverton, Wyoming.
Mr. Wright L. Hess, Douglas, Wyoming.
Miss Fredonia Huff, Casper, Wyoming.
Miss Dora M. Joslin, Kemmerer, Wyoming.
Miss Mary Osmond, Afton, Wyoming.
Miss Vernetta Stager, Sheridan, Wyoming.
Mr. Chas. Shoop, Thermopolis, Wyoming.
Mr. Harry W. Titus, Laramie, Wyoming.
Miss Hannah J. Wilson, Casper, Wyoming.

HIGH SCHOOL HONOR SCHOLARSHIPS

The Board of Trustees of the University in 1913 authorized the establishment of Honor Scholarships for each four-year high school of the State, to be awarded annually to those members of graduating classes having the best scholarship records. These Honor Scholarships are voted by the faculty of each high school, one for boys and one for girls. Holders of Honor Scholarships are exempted from the payment of official general fees during four years at the University. Appointments under this plan have been held in 1917-18 as follows:

Baggs High School—Mr. William C. Penland.
Basin High School—Mr. Glen Hartman.
Big Piney High School—Miss Ursula Tanner.
Buffalo High School—Mr. Art G. Burckert, Miss Nettie Potts, Mr. Fritz D. Burckert.
Douglas High School—Mr. Ralph McWhinnie.
Green River High School—Miss Helen Gaensslen, Charles Young.

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Laramie High School—Miss Virginia M. Miller, Mr. Theodore Olson, Miss Anne Coughlin, Mr. Charles Coolidge, Mr. Arthur Wichmann.
Newcastle High School—Miss Leda Harlow.
Rawlins High School—Miss Christine A. Frandsen.
Riverton High School—Mr. Marshall Feris.
Sheridan High School—Miss Beatrice L. Dana, Miss Vernetta Stager, Miss Gladys Hasbrouck, Miss Cora Williams.
Sundance High School—Miss Effie Yeoman.
Torrington High School—Miss Katherine J. Cloos.
Wheatland High School—Mr. Donald A. McDougall, Miss Jennie Ayres, Mr. Julius C. Galligar.

LOAN FUNDS

Small loan funds are available for deserving students of limited means who may need temporary assistance. Loans may be had upon application to the President of the University. They are made without interest and for periods which may be advisable in each case.

The State Federation of Women's Clubs maintains a loan fund for the assistance of students in the University. Information regarding this fund may be obtained from the secretary of the committee, Mrs. F. W. Phifer, Wheatland, Wyoming.

THE PHILO SHERMAN BENNETT PRIZE

By the will of the late Philo Sherman Bennett, the University received $400, the interest of which is to be used annually as a prize for the best essay by a student of collegiate grade on "The Principles of Free Government." The winners of this prize have been:

1906 Marcus Henry Walker.
1907 Leslie Bailey Cook.
1908 Vie Willits (Mrs. A. L. Garber).
1909 Julia A. Jones.
1910 Margaret Mary Woods.
1911 Wilburta Anna Knight (Mrs. C. Earl Cady).
1912 Agnes Rebecca Wright.

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1913 Agnes Rebecca Wright.
1914 Alice Downey.
1915—Not awarded.
1916 Wm. B. Cobb.
1917 Morgan V. Spicer.

BOOK AWARDS FOR SCHOLARSHIPS

To the student recommended by each Department of the University as maintaining the most satisfactory scholarship and evidences of growth and development, the President annually awards an "honor" book in the designated subject.

Awards of these prizes were made in 1917 as follows:

Miss Betty G. Beck, Cody, in the Department of Geology.

Mrs. Clara Bowman, Laramie, in the Department of Zoology.

Miss Lois Butler, Laramie, in the Department of Modern Languages.

Miss Dorothy Downey, Laramie, in the Department of History.

Miss Serafina Facinelli, Rock Springs, in the Department of Secondary Education.

Miss Christine A. Frandsen, Rawlins, in the Department of Chemistry.

Mr. Wright L. Hess, Douglas, in the Department of Veterinary Science.

Miss Hilda H. Kline, Laramie, in the Department of Home Economics.

Mr. Arthur Kolstad, E. Stanwood, Washington, in the Department of Mathematics.

Mr. Oscar Larson, Lusk, in the Department of Animal Husbandry.

Mr. Raymond A. Lundgren, Laramie, in the Department of Mining Engineering.

Mrs. Harriette B. Lewis, Laramie, in the Department of Rural Education.

Mr. Donald A. McDougall, Wheatland, in the Department of Civil Engineering.

Mr. Albert R. Mau, Cokeville, in the Department of Agronomy.

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Miss Virginia M. Miller, Laramie, in the Department of Commerce.

Mr. Arthur J. Nelson, Casper, in the Department of Mechanical and Electrical Engineering.

Mr. Theodore B. Olson, Laramie, in the Department of English.

Mr. Edwin B. Payson, Naturita, Colo., in the Department of Botany.

Miss Olive M. Rathbun, Kemmerer, in the Department of Political Economy.

Mr. Morgan V. Spicer, Laramie, in the Department of Political Science.

Mr. Morgan V. Spicer, Laramie, in the Department of Philosophy and Psychology.

Mr. Morgan V. Spicer, Laramie, in the Department of Military Training.

Miss Hildur Swanstrom, Big Piney, in the Department of Music.

Miss Ursula D. Tanner, Big Piney, in the Department of Home Economics.

Mr. Harry W. Titus, Laramie, in the Department of Physics.

Awards of books provided by Mrs. Knight, Adviser of Women, were made in the Department of Physical Education for women to—

Miss Betty Beck, of Cody, Wyoming.
Miss Margaret Hensley, of Burlington, Wyoming.

AGNES MATHILDE WERGELAND MEMORIAL HISTORY SCHOLARSHIP

The Agnes Mathilde Wergeland Memorial History Scholarship established in 1914 in memory of her colleague by Dr. Grace R. Hebard, and consisting of the income of a permanent fund of $1,000, is awarded annually, near the end of each academic year, by the Department of History, to that resident student who has been most distinguished in scholarship as a major student in that department.

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To be eligible for the award of this scholarship, a student must have successfully pursued studies in the Department of History for at least four semesters.

The student who holds this scholarship shall pursue more advanced studies in the Department of History during the ensuing academic year. Provided that a student to whom the scholarship has been awarded may be permitted, for sufficient reason, to be absent from the University for not more than one year and then return to receive the benefits of the scholarship under the terms of the award previously made.

Payments of the amount of the scholarship award shall be made in four installments: in September, December, April and June.

For the year 1917-18 this scholarship has been held by Mr. Ben H. Appleby, of Laramie, Wyoming.

MATTHIAS MENDBERG SCHOLARSHIP

A scholarship of $50.00, the gift of Mrs. E. K. Kline, in memory of her brother, Matthias Mendberg, was awarded for the year 1917-18 to Miss Norma Fisher.

GENERAL REGULATIONS

STUDENT CONDUCT AND GOVERNMENT

The University of Wyoming exists for the earnest young men and women of the State. It is not a correction school for young people who cannot be very well managed in their own homes.

The several Colleges of the University offer the standard courses of the better state universities. Their faculties consist of men and women who in preparation and power will compare favorably with the best. The laboratories, libraries and equipment are adequate for study and investigation.

In the old sense of the word, the University does not expect to administer discipline. In the real sense every day that a student spends in the University should be dis-

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ciplinary. It is expected that students will wish to grow along individual lines in order that they may develop strong individual characters. To this end reliance is placed upon the moral sense of students themselves. It is the wish of the Faculty to make the institution self-governing on the part of the student body. Any student who is idle, dissipated, disorderly in conduct, persistently negligent in his work, and who does not fit into this body of earnest, active young men and women, and is therefore a detriment to the welfare of the student body in general, will be required to withdraw. The active co-operation of parents or guardians for the welfare of students in whom they are interested, is cordially invited.

UNIVERSITY ASSEMBLY

Faculty and students assemble for a public meeting at the University Auditorium every Monday at 4 p. m. When occasion arises making it necessary, special assemblies are called. Announcements are made and subjects of general University interest are discussed. In addition there is usually a short address by some distinguished visitor, a member of the Faculty or the President to the end that the assembly hour may be instructive and inspiring. Faculty members and students are expected to attend this official Assembly unless excused for cause by the President.

CIVIL RELATIONS OF STUDENTS

The University does not yet provide a home for its men students. They select their homes in families with the advice of the Faculty and become amenable like other citizens to the laws and ordinances of the city. In the case of younger students, upon request, the Faculty Committee will be glad to select homes in which such students will be given the considerations and attentions of home life.

The residence halls, dormitories for women, are modern and equipped with all conveniences. Here young women have the immediate care and direction of the Adviser of Women of the University. No undue restrictions are placed upon the students, but every effort is made to afford

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them just such a life as it would be fitting and proper for them to lead in their own homes. Since rooms in these buildings are limited, it will be wise for parents planning to send their daughters to the University, to make early reservations.

PHYSICAL TRAINING

The gymnasium and athletic grounds afford ample opportunity for games and athletic sports throughout the year. Military drill is required of all able bodied men students under the age of thirty. College students who enter the Freshman Class from high schools must begin drill at once upon entrance. Preparatory students of the University who are fifteen years of age or over are required to take drill.

All regularly enrolled students of the University are required to take physical training in the Gymnasium for two hours per week during four semesters, usually in the Freshman and Sophomore years. Students physically unable to take these exercises may be excused upon presentation of a medical certificate from a physician designated by the Board of Trustees. Students so excused may be required to take corrective work.

Both men and women students receive physical examinations to ascertain their special needs with regard to the maintenance of health as well as to determine their fitness to participate in drill and other physical exercise.

ATHLETICS

The Associated Students of the University, subject to the control of a Faculty Athletic Committee, manage competitive athletics. Football, basketball, and field sports are encouraged. There are golf links and several tennis courts on the campus. As far as possible, all students, both men and women, are encouraged to participate in some form of athletics.

FEES AND EXPENSES

Tuition for general class instruction in all departments of the University is free.

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A matriculation fee of $2.00 must be paid by all students (except those regularly enrolled in residence in the University High School) at the time of admission to any department of the University. This fee is paid only once during a student's entire attendance.

All students are required to pay an official incidental fee of $3.00 each semester.

All resident students in regular semesters (except certain special students and those in the University High School) also pay a fee of $3.00 each semester covering all dues to the Associated Students of the University of Wyoming, and entitling them to free admission to all athletic and literary contests held under the auspices of the Association, as well as free copies of the *Wyoming Student.*

In departments requiring the use of apparatus and material, the students will pay fees covering cost of materials and apparatus consumed by them, together with all damages due to neglect or carelessness.

In case of inability on the part of the students to pay the above charges, the same, or any part thereof, may be remitted on the order of the President.

For special tuition for individual instruction in voice, piano, pipe organ, violin and orchestral instruments, see statements under the Division of Music.

All fees are to be paid in advance at the beginning of each semester to the Secretary of the Board.

COST OF LIVING

The cost of living depends in part upon the habits of the individual student. Good room and board, including heat and light, can be obtained in private families at prices ranging from $25.00 a month upwards.

The Women's Dormitories offer room and board to women students at $22.00 to $26.00 a month, depending upon the size and location of the room, and the number occupying it. These buildings have all modern conveniences, making them excellent homes. Because of limited room,

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applications for reservations should be made early. Board and room bills are payable monthly, in advance.

All students who occupy rooms in the University Dormitories are required to furnish their own towels and sheets and pillow cases. They should also provide themselves with a water glass, teaspoon and a waste-basket.

For several years a Student's Commons for men has been maintained by the University, furnishing excellent table board at first at a cost of $4.00 per week. War conditions have gradually forced the cost upward, making it necessary to charge $5.00 per week for the coming year. Applications for board (without room) at the Commons should be sent to Secretary F. S. Burrage.

SELF-HELP AND EMPLOYMENT

The University cannot promise employment to those who for lack of means wish to work their way through college. However, many young men and women each year do thus maintain themselves, and those desiring to do so, and who are enterprising and active, can generally find work if they look for it. The University itself offers positions where a number of students may obtain work by the hour, and there is always demand for student labor at stores, factories and private homes. In the assignment of student labor positions at the University, preference is given to students who have shown ability and worth. The President and Faculty will aid all students to secure work as far as they may be able to do so.

ADMISSION TO THE UNIVERSITY

METHODS OF ADMISSION

Students may be admitted to the different Colleges or Divisions of the University either by passing entrance examinations or by presenting certificates from approved schools.

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Graduates of approved high schools of Wyoming carrying courses covering four full years will be admitted without examination. The same rule will apply to graduates of accredited high schools of other states.

Students from high schools having courses covering fewer than four years and students who have completed partial courses may receive entrance credit for the amount of the work covered by their certificates. Such students may be admitted to the appropriate classes in the University High School, or may pursue special courses in collegiate departments.

Students of mature years may be admitted without certificates or examinations to pursue special courses for which they may be qualified. Such students will be admitted only on approval of their applications by the President.

Examinations for admission will be given at the opening of each term. Applicants may take examinations in any or all the required subjects. Examinations for admission will not be given at other times, except in unusual cases.

It is desirable for students to enter at the beginning of the first semester, if possible, because most of the subjects which begin at that time are not repeated in the second semester.

ENTRANCE UNITS

Preparatory work offered by candidates for admission is estimated in terms of "units." A unit is a subject running through one year of not fewer than thirty-four weeks with five recitation periods per week. These recitation periods should be forty or forty-five minutes long and usually a student should carry only four such units at a time.

REGULAR ADMISSION

Graduation from a standard four-year high school course, or the completion of at least fifteen units of preparatory work, is required for unconditional admission to the collegiate departments. Certificates must be filed with the Registrar, showing in detail the subjects pursued in high schools.

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While the University grants unconditional admission to the Freshman Class to all graduates of standard four-year high school courses, it is recommended that the high schools of Wyoming should organize their courses in conformity with the statement in later paragraphs of prescribed and elective units required from candidates for admission who are not graduates of standard four-year high school courses.

ADMISSION BY EXAMINATION

Each candidate for regular admission, not a graduate of a standard four-year high school course, will be required to pass entrance examinations on necessary subjects not covered by certificates. Every such candidate must complete entrance units to the number of fifteen in accordance with the following list of required and elective units:

Required of all candidates—
- English, 3 units.
- Language, other than English, 2 units.
- History, 2 units.
- Mathematics, 2 units.
- Science, 1 unit.

Elective units to make up the necessary fifteen points—
- English, 1 unit.
- Languages, other than English—Latin, 2 to 4 units; Greek, 2 to 3 units; German, 2 or 3 units; French, 2 or 3 units; Spanish, 2 or 3 units.
- History—Ancient History, 1 unit; Mediaeval History, 1 unit; Modern History, 1 unit; (or Mediaeval and Modern History, 1 unit); English History, ½ or 1 unit; United States History, ½ or 1 unit.
- Civics (including Wyoming Civics), ½ unit.
- Mathematics—Algebra, ½ unit; Solid Geometry, ½ unit; Trigonometry, ½ unit.
- Science—Physics, 1 unit; Chemistry, 1 unit; Biology, 1 unit; Botany, ½ or 1 unit; Zoology, ½ or 1 unit; Physiology, ½ unit; Physical Geography, ½ unit.
- Elementary Psychology, ½ unit.
- Elementary Pedagogy, ½ unit.

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Elementary Political Economy, ½ or 1 unit.
Bookkeeping, 2 units.
Shorthand, 2 units.
Typewriting, 1 unit.
Manual Training and Free Hand Drawing, 1 unit.
Home Economics, 2 units.
Elementary Agriculture, 1 unit.

A reasonable degree of substitution of subjects other than those listed in the above elective units may be sanctioned in special cases.

Suggestions as to the scope of the work required in the various units for admission may be obtained by consulting the descriptions of courses covering these units as offered by the University High School or by any standard four-year high school.

PRE-REQUISITES FOR CERTAIN COURSES

Students who are planning to enter the College of Agriculture should include in their preparatory courses two and one-half units of Mathematics (Algebra 1½ units; Plane Geometry 1 unit), and one unit of Physics. Those planning to enter the College of Engineering in addition to the above should have ½ unit of Solid Geometry. Freshmen in these Colleges who enter without having had these pre-requisites must take them in the University High School to make up their deficiencies.

Students in any of the Departments or Colleges of the University who wish to take Freshman Mathematics must have included two and one-half units in Mathematics (Algebra 1½ units, Plane Geometry 1 unit) in their preparatory courses.

A single unit will not be accepted in any language until after it has been pursued successfully for an additional year in the University.

Students who wish to continue the study of Latin in the University should have included four units in this subject in their preparatory courses.

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Preparatory pre-requisites for any college courses must be made up before such college courses can be pursued. In such cases, students who have offered full units for regular admission will be allowed college credits for the completion of such additional preparatory work, in the proportion of six semester credit hours for one entrance unit. These credits, however, can not be substituted for required work in any college courses.

CONDITIONAL ADMISSION

Candidates for admission to the Freshman Class of any College or Division who have completed not less than thirteen entrance units, will be granted conditional admission.

Entrance conditions must be removed within one year from the date of admission. This may be done by passing entrance examinations in the necessary subjects, by transfer of collegiate credits in the proportion of six semester hours for one unit, or on certificates for suitable courses completed in the University High School.

ADMISSION AS SPECIAL STUDENTS

Special students, not candidates for degrees, may be admitted in either of two categories:

(1) Those entitled to regular admission, but wishing to take merely certain special courses.

(2) Those not presenting full entrance units, but permitted because of maturity to take certain special courses for which they give evidence that they are sufficiently prepared.

ADMISSION TO UNIVERSITY HIGH SCHOOL

Students who have not completed four-year high school courses are admitted to the University High School upon presentation of suitable evidence of having finished at least the eighth grade.

ADMISSION TO ADVANCED STANDING

Admission with advanced standing may be obtained by the presentation of certified credits from standard colleges and universities. Certificates of honorable dismissal from

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institutions last attended must be presented by candidates for admission with advanced standing.

In special cases, upon approval of applications by vote of the Faculty, students may be permitted to obtain collegiate credits by passing examinations on courses not taken in classes.

In the case of students who enter on certificates showing an excess of completed units beyond those required for high school graduation and regular university admission, credits on the basis of six semester hours for one admission unit may be given on such excess units as represent advanced secondary work.

GRADUATION AND DEGREES

CREDITS AND SEMESTER HOURS

Semester credits are estimated in terms of "hours." A semester credit hour comprises work running through one semester and requiring on the average three hours of effort per week. These three hours may be occupied with lectures, recitations, laboratory work, lesson preparation, reports, etc.

Students should usually enroll for fifteen or sixteen semester credit hours. If they wish to enroll for fewer than fourteen or more than eighteen hours they must secure special permission upon petition to the President and Faculty.

Students registering more than one week late may be restricted in the number of hours for which they may enroll. The amount of such restriction will be determined in each case by the student's Advisory Committee.

Only students of marked ability, whose grades usually are I and II, should enroll for more than the normal average number of hours.

Any student not making satisfactory progress in the courses for which he is enrolled may be required to drop one or more courses and concentrate his work on fewer hours.

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This University does not wish to be merely an examination school. The value of work done by the student is determined not wholly by what he may know upon examination day, but as far as possible by its real meaning to the student himself. Determined by daily application and results, as well as by examination, the work of the student is marked I (excellent), II (good), III (medium), IV (passed), C (conditioned), F (failed).

Final examinations, in addition to other tests of attainment, may be given at the discretion of each instructor.

GENERAL REQUIREMENTS FOR GRADUATION

In all Colleges of the University the standard for graduation is the completion of a four year course, in addition to full entrance requirements.

A successful candidate for graduation in any of the Colleges or Divisions having courses of four years must have obtained credit for one hundred and twenty-six semester hours of collegiate grade, including the prescribed courses of the appropriate Division, with the further provision that he must obtain an average grade of at least "III" in the necessary one hundred and twenty-six semester hours; i. e., for each hour with a grade of "IV" there shall be one hour with a grade of at least "II." This regulation with reference to an average grade of "III" is to take effect at the beginning of the year 1917-18, but is not to be retroactive in any case.

Graduation from either of the two-year courses of the State Normal School and the two-year course in Public School Music require the completion of sixty-three semester hours of credit.

Courses I and II in the English Department, Physical Training for four semesters, usually in the Freshman and Sophomore years, and Military Drill for men, are required in all Colleges and Divisions.

Students who are not able to do satisfactory work in English I will be required to take a sub-Freshman course in English, without credit, to make up the deficiencies of their preparation.

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All departments will co-operate with the Department of English in attention to the correct use of English in all University exercises. If a student needs further instruction in English after having taken courses I and II, he will be required in the Junior year, upon the recommendation of the major professor and the professor of English, to take suitable additional instruction as a pre-requisite for graduation.

BACHELOR'S DEGREES

Upon the completion of any four year course outlined in the regulations of any College or Division, including one hundred and twenty-six semester hours and prescribed majors, minors, or required work, and an average grade of at least "III," a candidate will be entitled to receive the degree of Bachelor.

A candidate who has passed with the grade of (I) in fifty per cent of the semester hours required for his graduation, will receive the degree of Bachelor with honor—provided he has the recommendation of his major department.

Resident study in this University for a period of two semesters, or during three sessions of the Summer School, is required for the conferring of degrees.

As a general rule any student who is a candidate for the degree of Bachelor in any College or Division will be required to finish his work for graduation in residence. In special cases a candidate for a Bachelor's degree who has been in residence for six or more semesters may be permitted by the Faculty to take a leave of absence and complete work for the degree in this University by transfer of necessary credits from some other approved institution; provided, (a) that not more than one semester's credits may be thus transferred, except that two semesters' credit may be accepted from professional departments not established in the University of Wyoming; (b) that major and minor requirements for degrees must be fulfilled; (c) that the credits thus offered are not used to obtain a similar degree in another institution.

Degrees are conferred by the Board of Trustees on recom-

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mendation of the Faculty. They may decline, for good cause, to confer a degree upon any candidate.

The University confers first degrees as follows in the respective Colleges and Divisions on the completion of four year courses:

In the College of Liberal Arts, the degree of Bachelor of Arts.

In the College of Agriculture, the degree of Bachelor of Science.

In the College of Engineering, the degree of Bachelor of Science.

In the College of Education, the degree of Bachelor of Arts.

In the Division of Music, the degree of Bachelor of Music.

HIGHER DEGREES

Any person who has previously received the degree of Bachelor of Arts or Science or an equivalent degree from an institution of good standing, and who completes the requirements as outlined in the description of Graduate Courses (see later sections of this Catalogue) may receive the degree of Master of Arts (M. A.)

The degree of Master of Science (M. S.) will be conferred upon graduates of the Colleges of Engineering and Agriculture under the same requirements as apply to candidates for the degree of Master of Arts.

The University is not yet prepared to encourage students to become candidates for the degree of Doctor of Philosophy. In special cases by vote of the Faculty, candidacy for this degree may be sanctioned.

CERTIFICATES AND DIPLOMAS

THE NORMAL SCHOOL

Any person who completes any of the two-year courses of study as outlined for the State Normal School may receive the diploma of the State Normal School of the University of Wyoming.

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THE DIVISION OF MUSIC

A certificate is given for special work with a statement of the amount of work done. A diploma is awarded the student on the completion of the two-year course.

THE UNIVERSITY HIGH SCHOOL

A diploma will be granted upon the completion of the course of study of this School. This diploma admits to any of the Colleges or Divisions of the University without examination.

SHORT COURSES

Upon the completion of any short or special courses offered by any College or Division of the University, a certificate will be issued setting forth the extent of the work thus completed.

REFUSAL OF CERTIFICATE OR DIPLOMA

The Board of Trustees and the Faculty of the University may decline to grant any certificate or diploma, when good cause exists for such refusal.

STATE TEACHERS' CERTIFICATES

The 1917 legislature authorized the State Board of Education to set the standards for teachers' certificates. The following outline gives the more important facts concerning the new requirements that go into effect July 1, 1918, for certificates secured on the basis of normal school and college credits. Besides the certificates here outlined there are two rural certificates granted on normal training work in high schools, while all certificates except high school and administrative may be secured by examination.

I. ELEMENTARY CITY SCHOOL CERTIFICATES.

A. Class B.

4 years of high school work together with 15 semester hours of normal training. No experience required. Valid for 2 years to teach in elementary city schools. This certificate may be renewed twice for 2-year periods.

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B. Class A.

4 years of high school work together with 30 semester hours of normal training and 2 years experience. Valid for 3 years to teach in elementary city schools. May be renewed three times for 3-year periods.

C. Professional.

4 years high school together with graduation from standard 2-year normal school and three years of experience. Valid for life to teach in elementary city schools.

II. RURAL SCHOOL CERTIFICATES.

A. Class C.

4 years of high school work together with 5 semester hours of Rural Education. No experience required. Valid for 1 year to teach in rural schools. May be renewed once for 2 years.

B. Class B.

4 years of high school work together with 15 semester hours of Rural Education and one year of experience. Valid for 2 years to teach in rural and elementary city schools. May be renewed twice for 2-year periods.

C. Class A.

4 years of high school work together with 30 semester hours of normal training, of which 10 must be in Rural Education and two years of experience. Valid for 3 years to teach in rural and elementary schools. May be renewed three times for 3-year periods.

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D. Professional.

4 years of high school together with graduation from a standard two-year normal with 15 hours in Rural Education. Three years of experience required. Valid for life to teach in rural and elementary city schools.

III. HIGH SCHOOL CERTIFICATES.

A. Class 3.

Graduation from standard normal school (or 2 years of college) with: English, 4 hours; major subject, 12 hours; minor subject, 8 hours; minor subject, 6 hours. Also 8 hours in Education, including at least two of the following: Educational Psychology, Principles of Teaching, Methods, Practice Teaching or Observation, Secondary Education. One year of experience is required, but 8 hours of practice teaching may be substituted for the experience. Valid for 3 years to teach in grades 7, 8, 9, and 10. May be renewed indefinitely for 3-year periods.

B. Class 2.

3 years college or normal work with: English, 4 hours; major subject, 18 hours, minor subject, 10 hours; minor subject, 8 hours. Also 12 hours of Education, including at least 3 of the subjects listed as professional under Class 3. 2 years of experience required. Valid for 4 years to teach in grades 7-12. May be renewed indefinitely for 3-year periods.

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C. Class 1.

Graduation from standard college with: English, 4 hours; major subject, 26 hours; minor subject, 14 hours; minor subject, 10 hours. Also 16 hours of Education, including at least 4 of the subjects listed as professional under Class 3. 3 years of experience required. Valid for life to teach in grades 7-12.

IV. ADMINISTRATIVE CERTIFICATES.

A. Class 3.

Graduation from standard normal (or 2 years college) with: English, 4 hours; major subject, 12 hours; minor subject, 8 hours; minor subject, 6 hours. Also 10 hours in Education, including School Administration and Supervision, and at least one of the following: Educational Psychology, Principles of Teaching, Methods, Practice Teaching or Observation. 1 year of experience required. Valid for 3 years to act as principal of grades 1-10 or as county superintendent. May be renewed indefinitely for 3-year periods.

B. Class 2.

3 years of college or normal with: English, 4 hours; major subject, 18 hours; minor subject, 10 hours; minor subject, 8 hours. Also 15 hours of Education, including School Administration and Supervision, and at least 2 of the following: Educational Psychology, Principles of Teaching, Methods, Practice Teaching or Observation, Secondary Education. 2 years of experience required. Valid for 4 years to

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act as principal of grades 9-12, as superintendent of grades 1-10, or as county superintendent.

C. Class 1.

Graduation from standard college with: English, 4 hours; major subjects, 26 hours; minor subject, 14 hours; minor subject, 10 hours. Also 20 hours in Education, including School Administration and Supervision, and at least 3 of the following: Educational Psychology, Principles of Teaching, Secondary Education, Methods, Practice Teaching, History of Education. 3 years of experience required. Valid for life to act as principal of high school, as superintendent of grades 1-12, or as county superintendent.

V. SPECIAL CERTIFICATES.

4 years high school work and graduation from standard technical school (2-year course) or graduation from standard college with major (special technical subject) 25 hours, English, 4 hours. Also 6 hours in Education. If applicant has no Education he may qualify by taking examination and making minimum grade of 80% in Principles of Teaching. 2 years of experience required. Valid for life to teach special subjects named on certificate.

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The College of Liberal Arts

The College of Liberal Arts consists of the following divisions:

1. The Division of Letters and Sciences.
2. The Division of Commerce.
3. The Division of Music.

The Division of Letters and Sciences

GENERAL ORGANIZATION OF COURSES

The Division of Letters and Sciences offers opportunity to students to pursue courses in literature, history, science, language, mathematics, philosophy, etc., along the lines usually designated as general cultural courses. There are no fixed courses of study in this Division. The Advisory Committee confers with the new student with reference to his aims and previous preparation. After such conference, individual courses of study are arranged, suited as far as possible to the needs of each student. All studies are distributed among three groups, as follows:

Group 1. Language, Literature, Music.

Group 2. History, Political Economy, Political Science, Philosophy, Education, Commerce.

Group 3. Mathematics, Physics, Chemistry, Botany, Zoology, Geology, Physiology, Psychology.

REQUIRED SUBJECTS

Courses I and II in the English Department are required of all Freshman students. Military Drill is required of all able bodied men students under the age of thirty years. Physical Training is required for four semesters of all students usually in the Freshman and Sophomore years.

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MAJORS AND MINORS

A candidate for a degree in the Division of Letters and Sciences must select as early in his course as possible, and not later than the end of his Sophomore year, subject to approval by the Advisory Committee, the work of one department as his major subject and of two other departments in his minor subjects. The work of the major subject must consist of not less than twenty-six semester hours, and that of the minors not less than fifteen hours each. A student who chooses a major from one group must take a minimum of twelve hours in each of the other groups, and every student must take twelve hours of language other than English. He is urged to do this during the Freshman and Sophomore years, and to complete his major subject during the Junior and Senior years. Not more than fifty hours may be selected in any one subject except in special cases with the consent of the Faculty.

The selection of majors and minors is expected to be made with a view to the student's future life work. Not later than the close of the Sophomore year, in conference with the Advisory Committee, each student is required to tabulate his entire individual course of study. By this time in his college career a student should know something concerning his tastes and aptitudes, and should have reached some conclusion concerning his future activities. By repeated conferences with the Advisory Committee and with the heads of Departments in which work is being carried on, the student is encouraged to give much thought to this matter of the course of study as related to his individual needs.

COMBINED ARTS-TECHNICAL COURSES

In selecting studies other than the major and minor courses, students will be permitted to choose a limited amount of work in the technical Colleges and Departments of the University. This arangement is made in order that a student who plans to pursue a professional or technical course after being graduated in the Division of Letters and Sciences, may not only make suitable preparation for this

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course but may also lessen the time to be spent therein. Not more than thirty-two hours of election of this kind, however, may be made without special permission of the Faculty.

PRE-LEGAL COURSE

Requirements for admission to law schools, on the basis of the recommendations of the Association of American Law Schools, are met by the completion of two years of collegiate work beyond graduation from a four years' high school. Eight important law schools now require three years or more of collegiate work. The courses of the Division of Letters and Sciences, organized on the elective principle, meet the varied needs of students preparing to enter standard law schools. The following grouping is suggestive of a Pre-Legal Course meeting requirements and yet capable of adaptation to special cases:

FIRST YEAR

First Semester		Second Semester	
English I	3	English II	3
History V	3	History VI	3
Political Economy I	3	Political Economy IV	3
Political Science I	3	Political Science II	3
Military Drill	½	Military Drill	½
Electives	4–6	Electives	4–6
History I, Latin, French, German, Spanish.		History II, Latin, French, German, Spanish.	
	16½–18½		16½–18½

SECOND YEAR

First Semester		Second Semester	
Political Science III	3	Political Science IV	3
History IX	3	History X	3
Political Economy V	2	Political Economy VI	2
English XLIII	2	English XLIV	2
*Political Science XV	3	*Political Science XVI	3
Military Drill	½	Military Drill	½
Electives	3–5	Electives	3–5
History III, Commercial Law, Psychology I, Foreign Language.		History IV, Political Economy IV, Foreign Language.	
	16½–18½		16½–18½

*Students who intend to pursue more than two years of pre-legal study are advised to postpone till their Junior or Senior years courses indicated by an asterisk (*).

Students who desire to continue their pre-legal study beyond the Sophomore year are advised to select courses in the departments of English, History, Political Economy, Political Science, and Psychology,

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besides other electives. The following grouping is suggestive and not prescriptive.

THIRD YEAR

First Semester		Second Semester	
Political Science VII	3	**Political Science XVI	3
**Political Science XV	3	or	
or		Political Science XII	2
Political Science XI	2	Political Economy XII	3
Political Economy XI	3	English XLVIII	3
English XLVII	3	Military Drill	½
Military Drill	½	Electives	8–10
Electives	5–7	Political Economy, Political Science, History XXII, Languages, English, Philosophy and Psychology, Natural Sciences.	
Political Economy, Political Science, Languages, English, History, Natural Sciences.			
	16½–18½		16½–18½

**For students who have not taken this course earlier.

FOURTH YEAR

First Semester		Second Semester	
Political Science XI	2	Political Science XII	2
English XLIX	2	English L	2
Commercial Law I	3	Commercial Law II	3
Philosophy V	3	Philosophy VI	3
Psychology IX	3	Political Science X	3
History III	2	History IV	2
Military Drill	½	Military Drill	½
Electives	1–3	Electives	1–3
Political Economy, Political Science, History, English, Languages, Philosophy and Psychology.		Political Economy, Political Science X, History, English, Languages, Philosophy and Psychology.	
	16½–18½		16½–18½

PRE-MEDICAL COURSE

The University of Wyoming will undertake to prepare students for entrance to Class A medical schools. Forty-six leading medical schools are now requiring as a minimum for entrance two years or more of work in a College of Arts and Sciences, in addition to a four-year high school education. Fifteen others have announced that they will adopt similar standards before the session of 1918-19. To satisfy the requirements of a Class A medical school, the American Medical Association recommends the following standard of admission:

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1. *High School Requirements—*
   a. The student must have completed a four-year course of at least fourteen units in a standard accredited high school.

   b. The student may present for admission a wide range of high school subjects, but the units presented must include the following: English, three units; Algebra, one unit; Plane Geometry, one unit; History and Civics, one unit; French, two units; German, two units; or two units of Latin or Greek may be substituted for two units of French or German.

2. *Preliminary College Work—*
   Since January 1st, 1918, in addition to the high school work specified above, the minimum requirement for acceptable medical schools will be two years (sixty semester hours) of work in a College of Arts and Sciences approved by the Council or Medical Education. This college work should include at least eight semester hours each in Physics, Chemistry and Biology, including laboratory work, and in addition a course in Organic Chemistry, a second year of Biology, and more work in the modern language, unless a student already possesses a reading knowledge of it.

   If a student upon entering is unable to present the entire ten required high school units, he will be expected to make up the deficiency in addition to doing the sixty semester hours of college work before he will be recommended for entrance to a Class A medical college.

SCHEDULE OF SUBJECTS FOR ENTRANCE TO CLASS A MEDICAL SCHOOLS

FIRST YEAR

First Semester		Second Semester	
English I	3	English II	3
Chemistry I	4	Chemistry II	4
Zoology I or Botany I	4–5	Zoology II or Botany II	4–5
German V* or XI, or French V*	3	German VI or XII, or French VI	3
Military Drill	½	Military Drill	½
Electives	2–4	Electives	2–4
	16½–18½		16½–18½

*A student not prepared to take German V or French V will be required to take the grade of work in one of these languages for which he is prepared.

Suggested electives: Latin, or a second Modern Language; Psychology; Mathematics I-a and II-a; Physics III and IV.

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SECOND YEAR

First Semester		Second Semester	
Physics III	4–5	Physics IV	4–5
Organic Chemistry	5	Qualitative Analysis (advised)	3
Zoology III	4	Botany II-a or Zoology IV	3–4
Military Drill	½	Military Drill	½
Electives*	3–5	Electives	4–6
	16½–18½		14½–18½

*Students are required to have a reading knowledge of at least one modern language.

Suggested electives: Any subject previously listed, but not yet taken by the student; Bacteriology III and VI; English III and IV; continued work on a second Modern Language; Physiology I; Zoology VI or VIII; and, with permission, Zoology IX and X.

THIRD AND FOURTH YEARS

Students who expect to enter medical schools that require three or four years of college work for admission are expected to take all of the above required work, and in addition they should include in their work several of the courses listed as elective in the first two years; they should acquire a reading knowledge of a second modern language, or continue work with Latin, and should plan with the advisor to meet the specific requirements of the school selected.

Students completing a four-year course and satisfying the requirements for graduation will receive the degree of Bachelor. Students completing a three-year course may be permitted to take leave of absence and later obtain a Bachelor's degree from this University by transfer of credits for a year of satisfactory work in an approvad medical school.

As a war measure any student who has had two years of college work is eligible for admission during 1918-19 into the better class of medical schools, provided he has taken certain prescribed college courses in Physics, Chemistry, and Biology.

HOURS OF ENROLLMENT

It is advised by the Faculty that an average of sixteen hours' work be taken in each semester, though a maximum

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of eighteen and a minimum of fourteen will be allowed without special petition.

Students will be expected to select only courses for which they have had suitable preparation. Required courses, including English and Military Drill or Physical Training, are to be taken in regular order. Usually the courses announced in the several departments are to be taken in the order in which they are listed. Pre-requisites are stated in the descriptions of course, which should be consulted for fuller information.

DEGREES

General requirements for graduation must be met by candidates for degrees.

Any student of the Division of Letters and Sciences who completes credits for one hundred and twenty-six semester hours, including the prescribed work in English and Military Drill or Physical Training, together with required major and minor subjects, is eligible to be admitted to the degree of Bachelor of Arts.

ADMISSION

Admission methods and requirements for admission, as outlined under those topics, apply in this Division.

GRADUATE COURSES

The University of Wyoming offers a limited amount of graduate instruction. The graduate work is under the direction and control of the professors in charge of the respective departments but must be approved by the Committee on Graduate Students.

REGISTRATION

Applicants for registration in graduate standing must present proper credentials from standard colleges or universities.

Admission is granted to graduates of the University of Wyoming and other institutions of similar and approved standing. Graduates of institutions whose course of study

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is not substantially equivalent to that prescribed in this University are required to do an additional amount of undergraduate work before being admitted to candidacy for advanced degrees.

THE DEGREE OF DOCTOR OF PHILOSOPHY

The University does not encourage students to become candidates for the degree of Doctor of Philosophy. In special cases by vote of the Faculty candidacy for this degree may be sanctioned.

REQUIREMENTS FOR THE MASTER'S DEGREE

Admission to candidacy for the Master of Arts degree implies that the candidate in his undergraduate course shall have majored in that branch in which he intends to pursue his graduate study. Such admission shall be determined by the graduate committee and the head of the Department in which the candidate proposes to do his major work.

Each candidate must present prior to entrance upon his course of study, an outline of his proposed work to the graduate committee and to the professor in charge of his major study for their joint approval.

The requirements for the Master of Arts degree shall consist of one year's work (thirty semester hours) made up from courses listed in the catalogue as graduate courses. These courses must be chosen from one Department with the privelege of selecting correlated courses in other Departments by permission of the graduate committee and the professor in charge of the candidate's major work. At least ten semester hours of the year's requirement shall be research work, the results of which shall be incorporated in a satisfactory thesis presented not later than April 15th preceding graduation.

The minimum residence requirements shall be one year, or four summer schools of six weeks each. Resident graduate study done at other institutions making requirements equal to those of the University of Wyoming may, subject to the judgment of the graduate committee, be accepted as

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constituting part of the minimum residence requirement.

Courses pursued *in absentia* may be accepted as credit towards the Master of Arts degree by special permission of the graduate committee and the professor in charge.

A final examination, to be written or oral, or both, shall be given and shall be conducted by an examining board appointed by the Faculty and consisting of five members, three of whom shall be from Departments other than that in which the candidate pursues his major study.

The degree of Master of Science may be conferred upon graduates of the Colleges of Agriculture and Engineering, under the same requirements as apply to candidates for the degree of Master of Arts.

FEES

The regular matriculation and incidental fees must be paid on registration. Graduate students working *in absentia* pay the same fees as undergraduates in the Division of Non-resident Instruction.

COURSES OF INSTRUCTION
(Arranged Alphabetically)

ASTRONOMY

See under Mathematics.

BOTANY

The courses in Botany are elective in any order except that I and II, or their equivalents, are considered the foundation courses and are pre-requisite to all others except the Summer School courses. A fee of $1.00 is required in all courses, to apply on the cost of laboratory supplies. Loss or breakage (if any) is a separate charge.

I, II. *General Botany.* These courses extend throughout the year and are planned as a comprehensive introduction to the morphology and physiology of plants from the lowest to the highest group. During the latter part of course II, some time is given to field and laboratory work in ecology and taxonomy. Recitation, collateral reading and laboratory work.

Both semesters; recitations, T. Th., 10 o'clock; laboratory, M. W. F., 1 and 2 o'clock; four credit hours each semester.

IIa. *Elementary Botany.* This is a survey course adapted to students in Home Economics, Education, and to others who do not take major or minor work in Botany. A general view of the sub-

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ject is given through brief studies of structure, physiology, and classification of representative plants from each of the primary groups.
Second semester; M. T. W. Th. F., 8 o'clock; three credit hours.

III. *Plant Histology.* Methods will be given in microtechnique including killing, fixing, imbedding, sectioning, staining, and mounting plant tissues. Plant structures from the various representative groups will be included with special reference to the origin and function of such tissues. Permanent slides will be prepared which will be of value to teachers.
First semester; T. Th., 1-3 o'clock; two credit hours.

XI. *Plant Physiology.* A study of nutrition, growth, respiration, irritability, reproduction, and other activities of the living plant Two recitations and three hours of laboratory work with collateral reading.
First semester; M. F., 11 o'clock; three credit hours.

XII. *Plant Diseases.* The study of those diseases of crop plants which are caused by bacteria or fungi. Two recitations and three hours of laboratory work with collateral reading.
Second semester; hours to be arranged; three credit hours.

XIII. *Horticulture.* The principles of plant propagation and fruit production, orchard practice and a brief study of species, types and varieties of fruits. Two recitations and three hours of laboratory work with collateral reading.
First semester; hours and credit to be arranged.

XIV. *Native Forage Plants.* This is a practical laboratory and field study of the plants of economic significance from the forage standpoint. The grasses, sedges, rushes, legumes, etc., will be studied comparatively as to structure, composition and classification, attention being given to their recognition in the field. Text, Coulter and Nelson's Manual, and Forage Plants by Knight, Hepner and Nelson. Reference books, Vasey, Scribner, Beal and others.
Second semester; T. Th., 1-3 o'clock; two credit hours.

XVI. *Plant Ecology.* In this course a study is made of plants in relation to their environment. The causes determining the development and modifications of plant organs and of plant associations are considered. Laboratory and field work.
Second semester; M. F., 9 o'clock; three credit hours.

XIX. *Elementary Forestry.* This course includes laboratory and field work on the structure and identification of trees. Forests will be considered as to their influence on climate; their distribution; their value; their protection and regeneration. Text, Moon and Brown.
First semester; hours to be arranged; two credit hours.

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Graduate Courses

Courses III-XII and XVI may count as graduate courses in special cases. Other courses will be planned, on consultation, to meet the requirements of the individual student and may be along any line for which his former training has fitted him. Generally, two years' previous work along biological lines will be considered a prerequisite. Some of the suggested research courses are:

VII, VIII. *Taxonomic Work.* Monographic work upon an assigned genus or group of plants. Exhaustive study of the plants of some definite and limited field.

Both semesters; hours to be arranged; two to four credit hours each semester.

IX, X. *Pathological Problems.* The investigations of the diseases of some particular kind of plant or crop or of some particular disease as it relates itself to the native or crop plants.

Both semesters; hours to be arranged; credit hours to be arranged.

The above are merely illustrative, and other problems of a morphological, systematic, economic, or ecological character may be offered.

CHEMISTRY

All the courses offered in this department are experimental and inductive. They are designed to familiarize the student with carefully selected chemical facts, and with these facts as a basis to build practical conceptions of the principles, theories and laws which underlie the science of modern chemistry. The history and evolution of chemistry as well as its modern application in the arts and manufactures receive due consideration as far as practicable in each course so that students may have a better appreciation of the past and present value of the subject to mankind.

The first year in Chemistry is obviously the most important to the student, for, having completed a course embracing the points outlined above, he is prepared to take up the advanced courses either as a specialty or as a science correlated to other courses, while at the same time the student desiring but one year of Chemistry as a cultural study will carry with him a working knowledge of a subject inseparably connected with daily life.

A deposit is required in each laboratory course, half of which is used for operation and maintenance of the laboratory. The remainder, less breakage, will be refunded.

I, II. *General Inorganic Chemistry.* This course extends throughout the year, and requires no previous knowledge of the subject. It is a required study in all the technical departments of the University, and may be elected by others, preferably during the

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Freshman or Sophomore year. The latter half of the second semester is devoted to an elementary course in qualitative analysis. Deposit, three dollars each semester.

Both semesters; lectures and recitations, M. W. F., 9 o'clock; laboratory, T. Th., 1-3 o'clock; four credit hours each semester.

III. *Advanced Qualitative Analysis.* The laboratory work includes the identification of the elements in the presence of "interferences," also the use of the spectroscope, and the isolation of some of the rarer elements. Five hours laboratory and two hours recitation per week. Sophomore or Junior year. Pre-requisite, Chemistry II. Deposit, five dollars.

First semester; recitation, W., 9 o'clock; laboratory, T. Th., 1-3 o'clock; three credit hours.

IV. *Quantitative Analysis.* This course is designed chiefly for students in agriculture, and consists of elementary gravimetric and volumetric analysis as a preparation for the course in agricultural analysis in the senior year. Recitation one hour and laboratory six hours per week. Sophomore or Junior year. Pre-requisite, Chemistry III. Deposit, three dollars.

Second semester; recitation, W., 9 o'clock; laboratory, T. Th., 1-3 o'clock; three credit hours.

V. *Advanced Quantitative Analysis.* This course acquaints the student with special methods of analysis as applied to rock analysis, iron and steel, water (sanitary and mineral), and soils. Students intending to take up chemical engineering are eligible for this course. one hour recitation and twelve hours laboratory work a week. Junior year. Pre-requisite, Chemistry IV. Deposit, five dollars.

First semester; recitation, W., 8 o'clock; laboratory, hours to be arranged; five credit hours.

VI. *Household Chemistry.* This course is intended for students in Domestic Science who have completed the course in General Inorganic Chemistry or its equivalent, and who will later take Organic Chemistry. The course includes a study of such subjects as relate to the household and especially cleansing agents, fuels, combustion, oxidation, air, water, (purification and analysis), preparation and testing of foods and preservatives. Two lectures and recitations and three hours practicum weekly. Sophomore year. Pre-requisite, Chemistry II. Deposit, three dollars.

Second semester; lectures and recitations, T. Th., 8 o'clock; laboratory, W. F., 10-12 o'clock; three credit hours.

VII. *Organic Chemistry.* This course includes a systematic study of the compounds of carbon so far as they form a pre-requisite to the study of Foods and Agricultural Chemistry. The laboratory work gives instruction in the preparation of "type" compounds of the several series studied in the class room. Pre-requisite, Chemistry

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VI for Domestic Science students; and Chemistry IV for students in Agricultural Science. Deposit, five dollars.

First semester; recitations, M. W. F., 11 o'clock; laboratory, T. Th., 1-3 o'clock; five credit hours.

VIII. *Food Chemistry.* Study of the chemical nature, occurrence, metabolism, and quantitative estimation of proteids, carbohydrates and fats. The laboratory work is a study of the quantitative estimations of the chief food-stuffs in various products. Junior year. Pre-requisite, Chemistry VII. Deposit, five dollars.

Second semester; recitations, M. W. F., 11 o'clock; laboratory, T. Th., 1-3 o'clock; five credit hours.

IX. *Industrial Chemistry.* This course is elective and aims to give the student a survey of the processes involved in the manufacture of typical inorganic and organic compounds. Especial attention is given to the Engineering problems which confront the factory chemist by reviewing systematically the current Journals devoted to Industrial Chemistry. Simple articles in French and German are abstracted by the students so as to cultivate acquaintance with these languages. The texts used for reference are: Sadtler 'Industrial Chemistry;' Thorpe 'Industrial Chemistry,' and Benson 'Industrial Chemistry.' Junior or Senior year. Pre-requisites, Chemistry III and VII.

First semester; hours to be arranged; three credit hours.

X. *Agricultural Chemistry.* This course includes the study of soils, fertilizers and fertilizer material, the products of plant growth, the chemical changes taking place during plant growth, and a brief study of animal physiology, foods and digestion. Emphasis is laid upon the problems peculiar to the arid region. The course consists of lectures, quizzes and laboratory work. The laboratory work includes the analysis of fodders, soils and fertilizers. Required of Senior agricultural students. Pre-requisites, Chemistry IV and VII. Deposit, five dollars.

Second semester; hours to be arranged; four credit hours.

XI. *Inorganic Preparations.* Study of inorganic compounds and preparation of a number of difficult compounds and elements. Laboratory work twelve hours a week and one recitation; Senior year. Pre-requisite, Chemistry IV. Deposit, five dollars. Text: Thorpe's "Inorganic Preparations."

First semester; hours to be arranged; five credit hours.

XII. *Advanced Organic Preparations.* This course is for those who specialize in Chemistry. Senior year. Pre-requisite, Chemistry VII. Deposit, five dollars. Text: Gatterman's "Practical Methods of Organic Chemistry."

Second semester; hours to be arranged, one recitation and twelve hours laboratory work per week; five credit hours.

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XIII. *Urine and Milk Analysis.* A laboratory course designed especially for students in Veterinary Science. Pre-requisite, Chemistry III and IV. Deposit, five dollars.

First semester; hours to be arranged; two credit hours.

XIV. *Advanced Organic Chemistry.* This course includes a systematic review of principles and methods of Organic Chemistry as covered by the Holleman-Walker text-book. Senior year. Pre-requisite, Chemistry VII. Three recitations each week.

Second semester; hours to be arranged; three credit hours.

XV. *Physical Chemistry.* An introductory course including the Historical Development of Chemical Theory. The laboratory work consists of molecular weight determinations by the several methods, solubilities, dissociation in solution, and conductivity measurements. Senior year. Pre-requisites, Chemistry IV and VII. Deposit, five dollars.

Second semester; recitations three hours and laboratory work four hours per week; hours to be arranged; five credit hours.

XVI. *Electrochemistry.* Lectures on the theory of solution, ionization, dissociation in solution, and chemical decompositions and syntheses effected by the electric current in the laboratory and plant. The laboratory exercises exemplify the theoretical principles outlined above. Pre-requisite, Chemistry V.

Second semester; hours to be arranged; two hours of theory and three hours laboratory a week; three credit hours.

XVII. *Gas Analysis.* Principally laboratory work, but including enough theory to enable students to comprehend the principles involved in the analytical methods as applied to various gases. Some time will be given to a sanitary analysis of water.

First semester; hours will be arranged to suit the convenience of students; two credit hours.

Courses XI, XII, XIV, XVI, and XVII may be offered for graduate courses.

ENGLISH

For Public Speaking Courses see English XLI and following:

I, II. *Composition, Freshman.* Required of Freshman students in all departments of the University. The purpose of this course is to develop ability in practical writing. The schedule arrangements are such that no one should find any conflicts with this course. Applicants who have not the ability to do the regular work of the course, will be required to prepare themselves further in a sub-Freshman English without credit, as authorized by the Faculty. This means that no amount of High School English will entitle a deficient candidate to enter the course.

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As a practical application of the course, every encouragement will be given to the use of theme subjects from the departments in which the respective students have the most interest and information.

Texts and helps: University Lesson Sheets; Current Magazines; Slater's "Freshman Rhetoric;" Woolley's "Handbook of Composition;" Scott and Zeitlin's "College Readings."

Both semesters; M. W. F., 11 and 1 o'clock; three credit hours each semester.

IIIa, IVa. *History of English Literature.* Primarily for Sophomores, and required of English majors and candidates for the Normal school diploma. Pre-requisite: English I and II, or special permission.

Texts: Moody and Lovett's "History of English Literature;" Manly's "English Prose and English Poetry."

Both semesters; M. W. F., 2 o'clock; three credit hours each semester.

IIIb, IVb. *History of American Literature.* A survey of masterpieces and literary periods in this field. Recommended for English majors and especially for those who plan to teach high school English.

Both semesters; T. Th., 2 o'clock; two credit hours each semester.

V, VI. *Shakespeare.* A rapid reading of most of the plays, first as reflecting the life and the thought of Shakespeare's age, and next as showing his growth in dramatic power. Texts: MacCracken's "Introduction to Shakespeare;" Brooke's "Shakespeare's Principal Plays." Not offered 1918-19.

Both semesters; M. W. F., 10 o'clock; two credit hours each semester.

VII, VIII. *Contemporary Poetry.* Principal tendencies of English poetry since Tennyson, with particular attention to the influence of Whitman, the vers-librists, the major poets of the present generation, and the poetry of the World War.

Both semesters; T. Th., 9 o'clock; two credit hours each semester.

XI, XII. *The Short Story.* This work includes the study of famous short stories, and original composition, with especial emphasis upon the latter. Students of unusual ability may arrange for a semester of advanced work with extra credit. Pre-requisite, English I and II. Not offered 1918-19.

Both semesters; T. Th., 9 o'clock; two credit hours each semester.

XIIIa, XIVa. *Nineteenth Century Poetry.* This course extends from the Romanticists of the last of the Eighteenth century approximately through the first three-quarters of the Nineteenth century. The chief attention will be given to leading poets, such as Wordsworth, Shelly, Tennyson, and Browning.

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Both semesters; T. Th., 10 o'clock; two credit hours each semester.

XIIIb, XIVb. *Nineteenth Century Prose.* Primarily a study of the essayists, including Macaulay, Newman, Carlyle, Ruskin, Huxley, Stevenson, and others. Themes will be required on review topics, partly at least in imitations of the prose style observed in the selections studied.

Both semesters; T. Th., 3 o'clock; two credit hours each semester.

XVII, XVIII. *Introduction to the English Language.* A study of Old English prose. Bright's "Anglo-Saxon Reader." Second semester, Beowulf, and the Teutonic epic. Not offered 1918-19.

Both semesters; M. W. F., 9 o'clock; Three credit hours each semester.

XIX, XX. *Backgrounds of Literature.* Social, religious, scientific, and artistic ideals that have influenced the tone and aims of English literature. Masterpieces of the drama, novel, essay, biography, lyric, and epic will be studied in their relations to the changing currents of the world's thought. Library readings, lectures, and topics.

An historical-literature course, for English majors and for all wishing to study English literature in the light of social and intellectual movements.

Both semesters; M. W. F., 10 o'clock; three credit hours each semester.

XXI, XXII. *English Drama.* First semester, origin and development of English drama; reading of plays from the Miracles to the 19th Century. Text: "Representative English Plays." Second semester, principal tendencies in 19th Century and contemporary drama of Europe and America. Not offered 1918-19.

Both semesters, T. Th., 3 o'clock; two credit hours each semester.

XXIII, XXIV. *Middle English and Chaucer.* First semester, a study of the Middle English language. Cook's "Literary Middle English Reader." Second semester, the study of Chaucer's Canterbury Tales, and several of his minor poems. Skeat's Edition of Chaucer. A language-literature course primarily for English Majors.

Both semesters; M. W. F., 9 o'clock; three credit hours each semester.

XXV, XXVI. *The English Novel.* A study of the development of the English Novel from its beginning to the present day. This is a rapid reading course, covering a large number of the masterpieces that mark the development of this type.

Both semesters; T. Th., 9 o'clock; two credit hours each semester.

XXIX, XXX. *Advanced Composition.* Principles and practice in the writing of themes, articles, and technical papers. Text:

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Genung's "The Working Principles of Rhetoric." Intended primarily for students of English or other departments who wish further training in the proper development of subjects within special fields; also for advanced study of the finer distinctions of prose style. Study of models from the great essayists.

Both semesters; two credit hours each semester; hours to be arranged.

XXXI, XXXII. *The Theory and Practice of Journalism.* The first half of the work will be based on Blyer's "Newspaper Writing and Editing," with numerous exercises in reporting to give practical application of the text. The work of the second semester will be primarily a further application with special attention to practical problems of editing and management. It is usually found possible to have close contact with the work either of the "Wyoming Student" or one of the city newspapers. Assignments are made as frequently as practicable to special work on a newspaper.

Both semesters; T. Th., 10 o'clock; two credit hours. (This time will be changed to suit the convenience of the class.)

PUBLIC SPEAKING SECTION

XLI, XLII. *Introduction to Public Speaking.* A course in expression and delivery, including dramatic readings, oral topics, declamations, and short addresses. Primarily for Freshmen, in extension of the oral work of English I and II. Not offered for departmental requirements.

Both semesters; T. Th., 2 o'clock; two credit hours each semester.

XLIII, XLIV. *College Forensics.* Offered primarily for practical public speaking and logical analysis that will fulfill departmental recommendations for further English than Freshman Rhetoric. Written and oral argument, analysis of practical questions, extended exercise in briefing, principles of argument, and the preparation and delivery of addresses and debates. Pre-requisite, English I and II (Freshman Rhetoric), or adequate experience in debating.

Both semesters; T. Th., 11 o'clock; two credit hours each semester.

XLVII, XLVIII. *Models of Oratory.* A study of great orations and the history of oratory. Preparation of extended addresses and arguments, with practice in the delivery of the same. Primarily for students who wish to minor in Public Speaking, and for those taking the Pre-legal course. Pre-requisite, the preceding course, or adequate experience.

Both semesters; M. W. F., 2 o'clock; three credit hours each semester.

XLIX, L. *Advanced Public Speaking.* Analysis of models, applications of logic, impromptu topics, independent delivery of long

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addresses. Primarily as practice for field work of graduates and extension workers.

Both semesters; hours to be arranged; two credit hours each semester.

English Majors. Prospective majors in this department should realize that the field of English includes not only literature and composition but something of the development of the English language; ability in oral expression and public speaking; and a good general knowledge of the physical and social sciences. Breadth and thoroughness of preparation are therefore imperative.

Outlines of suggestions and requirements are furnished by the department on request.

FRENCH

I, II. *Beginning French.* Grammar-drill and practice in easy conversational phrases for beginners. Reading of about 100 pages of easy texts and enough written work to fix the fundamentals.

Both semesters; two sections; M. W. F., 8 o'clock, and M. W. F., 2 o'clock; three credit hours each semester.

III, IV. *Modern French.* Second year work. Reading and conversation; review of the grammar. About 400 pages of Modern French will be read in class and several easy stories will be assigned for outside reading.

Both semesters; two sections; M. W. F., 9 o clock, and M. W. F., 1 o'clock; three credit hours each semester.

ADVANCED FRENCH

Courses V-XII are third year; XV-XVIII are fourth year; other courses will be arranged to suit the demand.

V, VI. *Classical Prose and Verse.* A two-hour reading course of the French Classics. Those taking this course are advised but not required to take course VII-VIII, and if possible IX-X.

Both semesters; T. Th., 9 o'clock; two credit hours each semester.

VII, VIII. *Prose Composition and Review of Syntax.* Advised for all taking French as Minor or Major.

Both semesters; T. Th., 11 o'clock; one credit hour each semester.

IX, X. *French Conversation,* following some suitable text. Two hours' practice in class and less preparation outside. Advised for all taking French as Minor or Major.

Both semesters; hours to be arranged; one credit hour each semester.

XI, XII. *French Newspaper Reading* (or Scientific French). Given when three or more request. The content to suit the class.

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Both semesters; hours to be arranged; two credit hours each semester.

XIII, XIV. *History of French Literature.* A course given in English for any students of college rank. Readings of English translations of French classics and modern works, and a good History of French Literature.

Both semesters; hours to be arranged; two credit hours each semester.

XV, XVI. *The Romantic School and Since.* Prose and Criticism.

Both semesters; hours to be arranged; two credit hours each semester. Not offered in 1918-19.

XVII, XVIII. *The Modern French Drama.* This course is complementary to course XV-XVI, and should be taken with it. Select recent dramas will be read and criticism upon their importance.

Both semesters; hours to be arranged; two credit hours each semester.

GEOLOGY

I. *General Geology.* This course embraces a study of the more important relations of the earth to the other members of the solar system; the materials which make up the earth and the manner in which they occur; the forces upon the earth and the various changes they effect in producing topographic forms. The history of the earth will be discussed in relation to the physical record now preserved in the rocks. The constant aim will be to consider those phases of the subject which will make the geological record more apparent and intelligible to the student as he proceeds in the study of the science. No special text will be used, but constant reference will be made to standard works in the library. A notebook of approved form is to be kept by each student. For Freshmen.

First semester; T. Th., 8 o'clock; two credit hours.

II. *Historical Geology.* This course gives a general view of the history of the earth. Emphasis will be placed on the development and distribution of past life; the modern conception of evolution as interpreted by the study of fossil remains, and the origin and nature of the sedimentary rocks. The lectures will be illustrated by specimens, charts and stereopticon. Laboratory work will consist of field trips and a study of the main groups of fossil plants and animals.

Second semester; T. W. Th., 8 o'clock; three credit hours.

III, IV. *Elementary Paleontology.* An introduction to the study of fossils. Lectures to cover the fundamental principles of Paleontology. Laboratory work to consist of a study of the various

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groups of invertebrate and vertebrate fossils. Special attention will be paid to those forms, by means of which the various geological formations can be determined.

Both semesters; T. Th., 9 o'clock; two credit hours each semester.

V, VI. *Stratigraphical Geology.* This course will consist of a study of the principles of stratigraphical geology; the areal distribution and time relationships of the geological formations; the character of the rocks and their typical forms of life. Special emphasis will be laid on those formations characteristic of Wyoming and the adjoining regions. Field trips will be arranged. Pre-requisite, Geology, I, II.

Both semesters; M. W. F., 9 o'clock; three credit hours each semester.

GERMAN

I, II. *Beginning German.* Grammar-drill and practice in easy conversational phrases for beginners. Reading of about 100 pages of easy texts and enough written work to fix the fundamentals.

Both semesters; M. W. F., 1 o'clock; three credit hours each semester.

III, IV. *Modern German.* Second year work. Reading and conversation; review of the grammar. About 400 pages of modern German will be read in class and several easy stories will be assigned for outside reading.

Both semesters; M. W. F., 2 o'clock; three credit hours each semester.

ADVANCED GERMAN

Courses V-XII are third year; XV-XVIII are fourth year; XIX-XXII are fifth year; but any course beyond XII may be taken as graduate if not already taken as undergraduate work.

V, VI. *Classical Prose and Verse.* A two-hour reading course of German Classics. Those taking this course are adivsed but not required to take course VII-VIII, and if possible IX-X.

Both semesters; hours to be arranged; two credit hours each semester.

VII, VIII. *Prose Composition and Review of Syntax.* Advised for all taking German as Minor or Major.

Both semesters; hours to be arranged; one credit hour each semester.

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IX, X. *German Conversation.* Two hours' practice in class and less preparation outside. Advised for all taking German as Minor or Major.

Both semesters; hours to be arranged; one credit hour each semester.

XI, XII. *Scientific German.* Given when three or more request.

Both semesters; hours to be arranged; two credit hours each semester.

XIII, XIV. *History of German Literature.* A course given in English for all students of college rank. Readings of English translations of German Classics, and a good History of German Literature.

Both semesters; hours to be arranged; two credit hours each semester.

XV. *Lessing and His Time.* Several of his works and a history of his life will be carefully read.

First semester; hours to be arranged; two credit hours.

XVI. *Goethe's Faust.* Its development, history, and place in literature. Part I will be carefully read in class and Part II will be outlined; discussions and papers; Kleist and the Romantic School.

Second semester; hours to be arranged; two credit hours.

GREEK

For the courses in beginning Greek, covering the first two years, see Greek A, B, C, D, under the High School Department.

I. *Homer, the Iliad.* Books I, II, III and VI. Lectures on the Greek Epic, with a study of Homeric forms and syntax.

First semester; M. T. W. Th. F., 9 o'clock; five credit hours.

II. *Lysias.* Selected orations and prose composition. Lectures on the orators and Greek legal procedure.

Second semester; M. T. W. Th. F., 9 o'clock; five credit hours.

Courses I and II are required of all students who wish to take further work in Greek.

III. *Plato.* The Euthyphro, Apology and Crito. Lectures on the life and writings of Plato, and a study of the character of Socrates.

First semester; M. W. F., 2 o'clock; three credit hours.

IV. *Homer, the Odyssey.* Selections from Books I-XII. A study of Homeric life and manners.

First semester; M. T. W. Th. F., 2 o'clock; five credit hours.

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V. *Greek Tragedy; Aeschylus, Sophocles, Euripides.* The reading of plays by each author, accompanied by lectures on the origin of tragedy and the manner of putting plays upon the stage. Attention will be given to the appreciation of each play as literature. Open only to those students who have had two years of college Greek.
First semester; M. W. F., 8 o'clock; three credit hours.

VI. *Greek Tragedy; Aeschylus, Sophocles, Euripides.* A continuation of Greek V.
Second semester; M. W. F., 8 o'clock; three credit hours.

VII. *Herodotus, Thucydides.* Selections from Herodotus and books VI and VII of Thucydides. Lectures on the Greek historians. Open only to students who have had two years of college Greek.
First semester; hours to be arranged; three credit hours.

VIII. *Herodotus, Thucydides.* A continuation of course VII, subject to the same conditions.
Second semester; hours to be arranged; three credit hours.

IX. *Greek Prose Composition.* Intended especially for those who intend to teach.
First semester; Th., 11 o'clock; one credit hour.

X. *Greek Composition.* A continuation of Course IX.
Second semester; Th., 11 o'clock; one credit hour.

Courses V, VI, VII, VIII, may be taken as graduate courses. The work will differ from that required from undergraduates.

HISTORY

With the approval of the instructors involved, courses in History may be counted toward a major or minor in Political Economy or Political Science and *vice versa.*

By special arrangement with the instructor, courses III, IV, VII to XXVI, inclusive, may be taken for graduate credit.

I, II. *European History* from the fifth century to the end of the eighteenth. Open only to Freshmen and Sophomores.
Both semesters; M. W. F., 10 o'clock; three credit hours each semester.

III, IV. *Europe in the Nineteenth and Twentieth Centuries.* Beginning with an introductory survey of the Revolutionary and Napoleonic Era, this course takes up the conservative reaction, and the rise of nationalism and democracy. Emphasis is laid upon social and economic development. In the second semester the internal development and international relations of the chief European countries from 1871 to the present time are studied, with special reference to the

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Great War. Regular reading in current events is required throughout the course.

Both semesters; M. W. F., 8 o'clock; three credit hours each semester.

V, VI. *History of the United States, 1783 to 1876.*

Both semesters; M. W. F., 2 o'clock; three credit hours each semester.

VII, VIII. *History of the West.* Beginning with the "Old West" of the Piedmont Plateau, this course traces the occupation of the continent and the influence of the West upon American History and institutions from the first sectional struggle of the tidewater region with the back country down to the present time. Not offered in 1918-1919.

Both semesters; T. Th., 10 o'clock; two credit hours each semester.

IX, X. *Constitutional History of England.* Specially designed for students taking the Pre-legal course. Not offered in 1918-19.

Both semesters; M. W. F., 9 o'clock; three credit hours each semester.

XI, XII. *History of England.* Designed as a supplementary course to the history of English literature (English IIIa, IVa).

Both semesters; T. Th., 2 o'clock; two credit hours each semester.

XIII. *The Renaissance and Reformation.* The political background of the period is studied, but special emphasis is laid upon social and economic conditions and the developments in art, literature, and other phases of culture history. Not offered 1918-19.

First semester; M. W. F., 11 o'clock; three credit hours.

XIV. *The Revolutionary Period in Europe, 1763-1815.* The ancient regime, the French Revolution and its effects throughout Europe, the Napoleonic era. Not offered 1918-19.

Second semester; M. W. F., 11 o'clock; three credit hours.

XV, XVI. *The Expansion of Europe.* Brief introductory view of colonization and imperialism in ancient times; the rise of colonial empires following the discovery of the New World; the imperial systems and rivalries of Portugal, Spain, Holland, England and France from the sixteenth to the eighteenth centuries; the growth of the British Empire; the exploitation of Africa and of Asia; present colonial ambitions and rivalries of the nations. Not offered in 1918-19.

Both semesters; hours to be arranged; two credit hours each semester.

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XVII. *History of Greece.* Chief emphasis on cultural development. Not offered in 1918-19.
First semester; T. Th., 11 o'clock; two credit hours.

XVIII. *History of Rome.* Chief emphasis on the Roman Empire. Not offered in 1918-19.
Second semester; T. Th., 11 o'clock; two credit hours.

XIX, XX. *History of the South.* Settlement and expansion; sectionalism in the South; the "Progressive South" of the eighteenth century; economic development; the institution of slavery and its effect on economic, political and social conditions; the Solid South; the Civil War and Reconstruction; the New South. Not offered in 1918-19.
Both semesters; M. W. F., 9 o'clock; three credit hours each semester.

XXI, XXII. *History of the United States, 1865 to the Present Time.* This course takes up the Reconstruction Period, the tariff, free silver and other economic and social issues, the Spanish War, the rise of "big business" and its relation to politics, recent party struggles, and the Great War.
Both semesters; hours to be arranged; two credit hours each semester.

XXIII. *The American Colonies.* Political, social, and economic development; relation with the mother-country. Not offered in 1918-19.
First semester; T. Th., 2 o'clock; two credit hours.

XXIV. *The American Revolution.* Not offered in 1918-19.
Second semester; T. Th., 2 o'clock; two credit hours.

XXV, XXVI. *Europe in the Middle Ages.* Open only to Seniors and Juniors. Not offered in 1918-19.
Both semesters; hours to be arranged; two credit hours each semester.

LATIN

The following courses are intended to give the student an opportunity in any term to extend his knowledge of Latin Literature and at the same time to provide a systematic course for the training of those who specialize in the subject with a view to teaching.

I. *Livy.* Selections from Books XXI and XXII; prose composition.
First semester; M. W. F., 1 o'clock; three credit hours.

II. *Cicero, de Senectute; Horace, Odes and Epodes.*
Second semester; M. W. F., 1 o'clock; three credit hours.

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Courses I and II are the regular Freshman courses and must precede all others. They may, however, be elected by any student after the Freshman year. Four years of Preparatory Latin are prerequisites.

III. *Plautus and Terence.* The Trinummus of Plautus and Adelphia and Andria of Terence. Lectures on the Roman theatre and the origin of comedy.
First semester; M. W. F., 10 o'clock; three credit hours.

IV. *Tacitus.* Agricola and Germania. Lectures on the literature of the Empire.
Second semester; M. W. F., 10 o'clock; three credit hours.

V. *Latin Writing.* The work of this course consists almost entirely in writing exercises that involve the essential rules of Latin Syntax.
First semester; T. Th., 1 o'clock; two credit hours.

VI. *Latin Writing.* A continuation of course V.
Second semester; T. Th., 1 o'clock; two credit hours.

VII. *Lucretius.* Selections. This is an advanced course open only to students who have had a year's work in addition to courses I and II.
First semester; T. Th., 2 o'clock; two credit hours.

VIII. *Juvenal.* This course is designed to follow VII, but is open to any who have taken two years of college Latin.
Second semester; T. Th., 3 o'clock; two credit hours.
Courses VII and VIII may be taken as graduate courses. The writers studied may be changed to meet the wishes of graduate students.

LIBRARY SCIENCE

A one-year course is offered for those who wish to train for library service, and for those in other departments who may wish to elect this subject. The instruction covers the generally accepted methods and practice in library work. Students who complete a one year's course will be prepared to accept positions in library service. In connection with the technical class work, actual practice work will be required of each student. Students desiring merely to obtain practical information on the use of a library, general reference books, selections of books, etc., may elect this course for one or more credit hours.

I. (1) Reference work; (2) Classification; (3) Bookbinding, printing, mending of books; (4) Cataloging and shelf listing; (5) Children's literature and story-telling.

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First semester; 1-4 o'clock, hours to be arranged; one to five credit hours.

II. (1) Reference work; (2) Selection of books; (3) Loan department; (4) Library administration and other work; (5) Children's literature and story-telling. No credit given for only one semester's work.
Second semester; 1-4 o'clock, hours to be arranged; one to five credit hours.

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MATHEMATICS

The instruction in Mathematics aims to develop the powers of mental concentration, to give facility in attacking original problems, ability to recognize the difference between logical proof and presumptive evidence, and to form in the student the habit of expressing his ideas in concise mathematical language.
Two and one-half units of preparatory Mathematics (Algebra 1½ units, Plane Geometry 1 unit) are pre-requisites for collegiate Mathematics.

I. *Advanced Algebra; Plane Trigonometry.*
First semester; M. T. W. Th. F., 10 o'clock; five credit hours.

II. *Spherical Trigonometry; Elementary Analytical Geometry.*
Second semester; M. T. W. Th. F., 10 o'clock; five credit hours.

Ia. *Advanced Algebra; Plane Trigonometry.* This course has been designed as a mathematical preparation for those students especially who intend to enter the Agricultural College, the biological sciences, or experimental education.
First semester; M. W. F., 10 o'clock; three credit hours.

IIa. *Advanced Algebra; Introduction to Statistical Methods.* A continuation of Ia.
Second semester; M. W. F., 10 o'clock; three credit hours.

III. *Elementary Differential Calculus.*
First semester; M. T. W. Th., 11 o'clock; four credit hours.

IV. *Elementary Integral Calculus; Ordinary Differential Equations.*
Second semester; M. T. W. Th., 11 o'clock; four credit hours.

V. *Analytical Mechanics.*
First semester; M. T. W. Th. F., 9 o'clock; five credit hours.

VI. *Applied Mechanics.*
Second semester; M. T. W. Th. F., 9 o'clock; five credit hours.

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VII. *Descriptive Astronomy.*
First semester; hours to be arranged; three credit hours.

VIII. *Mathematical Astronomy.* Pre-requisite, I-IV.
Second semester; hours to be arranged; three credit hours.

IX. *Differential Equations.* Pre-requisite, an elementary course in calculus.
First semester; M. W. r'., 11 o'clock; three credit hours.

X. *Determinants and Theory of Equations.* Pre-requisite, I.
Second semester; T. Th., 11 o'clock; two credit hours.

XI. *Advanced Calculus.* Pre-requisite, an elementary course in calculus.
First semester; hours to be aranged; two credit hours.

XII. *Advanced Calculus.* Continuation of XI.
Second semester; hours to be arranged; three credit hours.

XIII. *Modern Methods in Analytic Geometry.* Pre-requisite, II.
First semester; hours to be arranged; three credit hours.

XIV. *Solid Analytic Geometry.* Pre-requisite, II.
Second semester; hours to be arranged; two credit hours.

XV. *Projective Geometry.* Pre-requisites, II and an elementary course in calculus.
First semester; hours to be arranged; three credit hours.

XVI. *Differential Geometry.* Pre-requisites, IX and XIV.
Second semester; T. Th., 2 o'clock; two credit hours.

XVII. *Advanced Algebra.* Pre-requisite, an elementary course in calculus.
First semester; hours to be arranged; two credit hours.

XVIII. *Introduction to the Theory of Functions.* Pre-requisite, an elementary course in calculus.
Second semester; hours to be arranged; three credit hours.

XIX. *History of Mathematics.* Designed to give a comprehensive view of the problems and methods of the principal divisions of mathematics.
This course should be taken by all who intend to teach High School Mathematics.
Pre-requisite, a course in calculus.
First semester; hours to be arranged; two credit hours.

XX. *History of Mathematics.* A continuation of XIX, with emphasis on the development of the fundamental concepts of Arithmetic, Algebra and Geometry.

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Second semester; hours to be arranged; two credit hours.
Graduate credit may be given for all courses after VIII.

For teacher's training course in High School Mathematics see under College of Education, courses XV and XVI.

PHILOSOPHY AND PSYCHOLOGY

The work of this department is intended to furnish an acquaintance with philosophic thought and to afford a training in the methods of investigating psychological problems. Special attention is given to experimental psychology. All courses in psychology include either laboratory practice or class demonstrations. The work in this subject is illustrated by charts and models of the brain and sense organs. The department is well equipped for introductory experimentation.

I. *Introductory Course in Psychology.* The standpoint and methods of psychology; structure and function of the nervous system; sensation and perception; memory, association, and thought; attention and instinct; emotive and volitional complexes. Recitations, demonstrations and lectures.

Section 1. Open to all college students.
First semester; M. W. F., 8 o'clock; three credit hours.

Section 2. Required of students in the College of Education who are electing work in rural education and elementary grade training.
First semester, T. Th. F., 8 o'clock; three credit hours.

II. *Educational Psychology.* Study of topics of particular value to teachers; the instinctive life; the learning process; applied psychology of memory and association; transfer of training; mental fatigue. At least one period a week is devoted to simple experimentation such as that outlined in Starch's "Experiments in Educational Psychology." Pre-requisite, I.
Second semester; M. W. F., 8 o'clock; three credit hours.

III, IV. *Experimental Psychology.* Classical experiments in the fields of sensation, space perception, attention, action, memory, association, imagery and judgment. Introductory to work on special problems. Pre-requisite, I.
First and second semesters; lectures and recitations, M. W. F., 1 o'clock; laboratory practice, T. Th., 1-3 o'clock; five credit hours each semester.

V. *Logic.* Consideration of the principles of reasoning and the methods of science; detection of fallacies; evidence. Pre-requisite, I.
First semester; M. W. F., 9 o'clock; three credit hours.

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VI. *Ethics.* Critical examination of different ethical theories, chiefly: Hedonism, ancient and modern; Rigorism and evolutionary Utilitarianism. Lectures and discussions with readings from Plato, Aristotle, Kant, Mill, Spencer, and others. Pre-requisite I.
Second semester; M. W. F., 9 o'clock; three credit hours.

VII. *Greek Philosophy.* A study of the translation of the fragments of the pre-Socratic philosophers; of selected dialogues of Plato, and of selections from Aristotle's *Metaphysics and Ethics.* Lectures, reference reading, reports.
First semester; M. W. F., 2 o'clock; three credit hours.

VIII. *Modern Philosophy.* Outline of the development of modern philosophy. Lectures, reading, reports.
Second semester; M. W. F., 2 o'clock; three credit hours.

IX. *Mental Measurements.* Detailed study, through reference reading, lectures, and experimental demonstrations, of the various measuring scales of intelligence, particularly the Binet-Simon, the Terman, and the Yerkes Point Scale. Among the topics considered will be the following: The origin of the Binet-Simon Scale; the critique of the scale; various modifications and extensions of it that have been suggested; comparison of the results obtained by application of the various scales; utilization of the measurements of general intelligence in work with juvenile delinquents, with mental defectives and with normal children and adults. The bearing of this work upon vocational guidance will be considered and its application to various educational problems such as the organization of ungraded and special classes. Pre-requisite, III and IV.
First semester; T. W. F., 4 o'clock; three credit hours.

X. *Social Psychology.* Application of psychological principles to group organization; social utilization of such instincts as flight, defense, imitation, curiosity, play; social factors in invention; organization in society of thought, emotion and will. Lectures, reference reading, reports. Pre-requisite, I.
Second semester; M. W. F., 11 o'clock; three credit hours.

XI, XII. *Literary Esthetics.* A study of psychological data of interest in connection with the interpretation of literature. The following topics will be considered: Mental imagery; the inner speech and the psychology of reading; the psychology of the word, of connotation, and of figures of speech; hypnotic devices of art; poetry and dreams; logic of the emotions; literary empathy. Lectures and reference reading. Pre-requisite, I.
Both semesters; T. Th., 11 o'clock; two credit hours each semester.

XIII, XIV. *Special Problems.* Experimental work on selected problems. Pre-requisite, IV.
Both semesters; hours to be arranged; two to five credit hours.

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Courses VII, VIII, IX, XI, XII, XIII, XIV may be taken as graduate courses.

PHYSICAL EDUCATION

The department of Physical Education aims to create and maintain a vigorous state of health in every student in college, to lay the foundation for proper living and care of the body, to point out physical deformities and inequalities, to prescribe corrective exercises and so to train the musculature that efficiency, good carriage and good health result. Recreation and athletics play an important part in the work of the department. All students, both men and women, are given physical examinations annually. Courses are prescribed for Freshman and Sophomore students.

PHYSICAL EDUCATION FOR WOMEN

Women students in all Colleges and Departments are required to take courses in Physical Education to the amount of two credit hours in four semesters. Except when granted postponement or exemption, women students will meet this requirement while in Freshman and Sophomore standing. Those entering with two or more years of advanced credit are not required to take Physical Education.

I. Light gymnastics, Swedish gymnastics, correction of improper walking and standing positions. Elementary dancing and gymnastic games. Lectures in personal hygiene.
First semester; T. Th., 11 o'clock; one-half credit hour.

II. Course one continued. Elementary work on spring board, parallel bars and rings.
Second semester; T. Th., 11 o'clock; one-half credit hour.

III. Light gymnastics, military marching. German gymnastics, dumb bells, wands and Indian clubs. Elementary exercises on the horse, flying rings and horizontal bar. Athletic and gymnastic games. Artistic and folk dancing.
First semester; T. Th., 10 o'clock; one-half credit hour.

IV. Course three continued. Basketball, indoor baseball, field hockey and tennis.
Second semester; T. Th., 10 o'clock; one-half credit hour.

PHYSICAL EDUCATION FOR MEN

Courses are prescribed for Freshmen and Sophomores. Upperclassmen, business, short course and special students should, after examination, join the gymnasium class or athletic squad that best suits their physical needs. A student who is a member of a regular athletic squad may be excused from part or all of the work of the prescribed courses.

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V. Elementary exercises on apparatus and in floor work. Games Personal Hygiene and health talks. Prescribed for Freshmen.
First semester; T. Th., 3 o'clock; one-half credit hour.

VI. A continuation of course V.
Second semester; T. Th., 3 o'clock; one-half credit hour.

VII. More advanced exercises on apparatus and in floor work. Lectures and discussions on physical educational subjects. Prescribed for Sophomores.
First semester; hours to be arranged; one-half credit hour.

VIII. A continuation of course VII.
Second semester; hours to be arranged; one-half credit hour.
Note. Boxing, wrestling and indoor track form a part of the work in courses V, VI, VII and VIII.

IX. A course in the Theory and Practice of Physical Education. Enough practice in floor work and on apparatus will be taken to render students competent to lead classes in elementary work. The large muscle groups will be studied and kinesiology, anthropometry, first aid, applied hydrotherapy and massage, and special lectures on physical educational subjects will be included in the work of the course. Some proficiency in gymnastic work and knowledge of elementary physiology required. Courses V and VI are pre-requisites.
First semester; hours to be arranged; three credit hours.

X. A continuation of course IX. Advanced work on apparatus and in floor work. History of physical education, physiology of exercise, physical diagnosis (methods of examination for bodily defects), organization, construction and equipment, medical gymnastics, paidology, administration, public school and playground methods, with special lectures on physical educational subjects. Course IV is a pre-requisite.
Second semester; hours to be arranged; three credit hours.

XI. Personal hygiene for men. A text book course. Courses V, VI, VII, VIII, IX and X pre-requisites.
First semester; hours to be arranged; two credit hours.

XII. Physical Diagnosis. Text book course with laboratory work on living subjects. Courses V, VI, VII, VIII, IX and X pre-requisites.
Second semester; hours to be arranged; two credit hours.

SPECIAL COURSES FOR MEN AND WOMEN

XIII. *First Aid and Emergencies.* Treatment in case of accidents, fractures, dislocations, wounds, hemorrhages, poisoning and drowning. Bandaging, nursing and general care of the sick. Recitations and demonstrations.
Second semester; hour to be arranged; one credit hour.

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PHYSICS

I. *College Physics.* Primarily for engineering students. Mechanics, sound, and heat. Lectures, recitations, and laboratory work. This course is required of all second year engineering students and may be elected by students of other departments. It must be preceded by a year's work of approved elementary physics, and must be preceded or accompanied by plane trigonometry. Laboratory fee, $2.00.

First semester; recitations and lectures, M. W. F., 8 o'clock; laboratory work, T. Th., 1-3 o'clock; five credit hours.

II. *College Physics.* Primarily for engineering students. Magnetism, electricity and light. Required of all second year engineering students. Pre-requisites, Physics I, and trigonometry. Laboratory fee, $2.00.

Second semester; recitations and lectures, M. W. F., 8 o'clock; laboratory work, T. Th., 1-3 o'clock; five credit hours.

III. *General Physics.* Lectures, recitations, and laboratory work. Two recitations and one laboratory period per week. This course is designed for all college students desiring a course in college physics, but one distinctly less mathematical than that given for engineers. It is for those students who are not necessarily scientific in their tastes or choice, but who desire a comprehensive outline of the essential principles of Physics. A knowledge of higher mathematics therefore is not essential. Laboratory fee, $1.00.

First semester; recitations, M. W. F., 2 o'clock; laboratory hours to be arranged; four or five credit hours.

IV. *General Physics.* A continuation of course III. Lectures, recitations, and laboratory work. Laboratory fee, $1.00.

Second semester; recitations, M. W. F., 2 o'clock; laboratory hours to be arranged; four or five credit hours.

V. *Electrical Measurements.* Lectures, recitations and laboratory work. This course includes all the modern methods of measuring resistance, current, electromotive force, battery resistance, resistance of electrolytes, the calibration of bridge wires, the checking of standards, and the testing of all the important batteries. Pre-requisites, Physics I and II. A knowledge of calculus is needed. Laboratory fee, $2.00.

First semester; recitations and lecture; T. Th., 8 o'clock; laboratory work, T. Th., 1-3 o'clock; four credit hours.

VI. *Advanced Electrical Measurements.* Required of all electrical students. This course is a continuation of course V, and includes capacities, inductances and magnetism. It must be preceded by course V. Laboratory fee, $2.00.

Second semester; recitation, Th., 8 o'clock; laboratory work, T Th., 1-3 o'clock; three credit hours.

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VII. *Sound.* Lectures, recitations, and laboratory work. Must be preceded by courses I and II or III and IV, and calculus. Laboratory fee, $2.00.

First semester; hours to be arranged; four credit hours.

VIII. *Light.* Lectures, recitations and laboratory work. Prerequisites, Physics I and II, or III and IV. Laboratory fee, $2.00.

Second semester; hours to be arranged; four credit hours.

IX. *Heat.* Lectures, recitations and laboratory work. Laboratory fee, $2.00.

First semester; hours to be arranged; four credit hours.

Opportunity will be afforded for specialization, and additional courses may be added whenever asked for. Courses V, VI, VII, VIII and IX count as graduate work if so elected.

PHYSIOLOGY

One of the primary conditions of health is the proper functioning of the different organs and structures of the body. It is obvious that the person who has a knowledge of and understands the principal functions of the human body will thereby be able to keep in better health, and in many cases avoid disease. It is the principal purpose of the courses in this department to provide such a knowledge. Any one or two courses here listed may be counted toward fulfilling the requirements for a major or a minor in the Department of Zoology.

I, II. *Elementary Physiology and Hygiene.* This is a study of the principal functions of animals in general, but with special reference to the human body. The underlying facts of digestion, absorption, circulation, assimilation, secretion, excretion and respiration are considered. Special attention is given to the general structure and functions of the central nervous system and the sense organs. The application of the laws of physiology to personal and public hygiene and sanitation is emphasized in the latter part of the work. This is an excellent general culture course, aims to meet the needs of teachers, and lays the foundation for subsequent work in physiology. It is best preceded by Zoology I and II and one or more courses in Chemistry. Laboratory fee, $1.00 per semester.

Both semesters; recitations, W. F., 9 o'clock; laboratory work, T, Th., 1-3 o'clock; three credit hours.

III. *Physiology, General and Experimental.* This course takes up in an advanced way the physiology of the blood, circulation, respiration, digestion, metabolism, absorption, secretion, and excretion. The work consists of lectures, recitations, demonstrations and laboratory experiments to illustrate the fundamental principles of physiology. Pre-requisites, Zoology IV and Physiology II. It is

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desirable also to have had physiological chemistry. Laboratory fee, $4.00.

First semester; hours and credits to be arranged.

IV. *Physiology, General and Experimental.* A continuation of course III, devoted to a study of the physiology of muscles, of heat, of the central nervous system and the sense organs. The plan of the work is similar to that of course III. Laboratory fee, $4.00.

Second semester; hours and credits to be arranged.

VI. *Histology.* See Zoology VI. May follow Physiology I. Laboratory fee, $3.00.

Second semester; recitations, T. Th., 8 o'clock; laboratory, W. F., 1-3 o'clock; four credit hours.

VIII. *General Physiology.* Open to students in Agriculture and to those preparing for vocational teaching. Pre-requisite, Zoology I and II. Laboratory fee, $1.00.

Second semester; two recitations, and one three-hour laboratory period per week; hours to be arranged; three credit hours.

POLITICAL ECONOMY

With the approval of the instructors involved, courses in Economics may be counted toward a major or minor in History or in Political Science, or *vice versa.*

The study of Economics deals with the relations of men in society so far as relates to provision for the wants of life. The courses will be founded upon the necessary study of theory, but will be designed to give practical information.

I. *Principles of Economics.* This course embraces the elements of economic science and gives a general view of economic thought. A text-book is used, supplemented by lectures, written reports from assigned individual reading, and consultation of various authors and works in the library. The course also includes outline work in the evolution of economic society, consumption, production, exchange, tariff, monopolies, distribution, wages, interest, rent, the relation of the state to industries, agricultural problems and public revenue and expenditures.

First semester; M. W. F., 9 o'clock; three credit hours.

IV. *Money, Banking and Commercial Crises.* This course includes the nature and purpose of credit and the evolution of money, tracing its growth from a commodity to the present day monetary system, government paper money, the history of banking in the United States, a comparison of our banking system with those of the leading European countries, clearing houses, stock exchanges, the money market and present day banking problems, the development of financial

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and industrial prosperity and panics and crises. Course I is a pre-requisite.

Second semester; M. W. F., 9 o'clock; three credit hours.

V. *Labor.* Modern labor problems, labor organizations, agencies and principles of industrial peace. Labor laws in Wyoming in relation to wage earning, factory acts, child labor, regulation of hours, employers' liability and workmen's compensation. Courses I and II pre-requisite. Not offered in 1918-19.

First semester; T. Th., 10 o'clock; two credit hours.

VI. *Railway Problems.* This course commences with the American transportation system, followed by investigation as to the organization, equipment and operation of selected representative railroads, the theory of railway rates, long and short haul, economic waste in transportation and an analysis of the Interstate Commerce Law as interpreted by our Supreme Court. Pre-requisite, course V. Not offered in 1918-19.

Second semester; T. Th., 10 o'clock; two credit hours.

XI, XII. *Sociology and Social Problems.* Designed for the investigation of particular problems in social organization, immigration, city and country life, marriage and divorce, woman and child labor, the general labor problems, occupational diseases, wealth and poverty, charity, correction, defectives, immigration, settlement work and criminology. Discussion of papers presented as a result of individual work.

Both semesters; M. W. F., 10 o'clock; three credit hours each semester, but single semester credit not given.

XV, XVI. *Economic Wyoming.* A study of the economic conditions of the lands within the boundary of what is now Wyoming, and their relations to the historical development of the State; their relation to the early explorers, covering a period of time from the earliest days of this part of the West to the time of the Constitutional Convention. This course will trace as far as is possible the routes of the Verendryes, Colter, the Astorians, Ashley and Smith, Bonneville, Fremont, the trappers and traders, and the trails; the relation of the first transcontinental railway to the industries of the State. Not offered to Freshmen.

Both semesters; M. W. F., 8 o'clock; three credit hours each semester.

XVII, XVIII. *The Constitutional Government of Wyoming.* The course deals with the territorial laws, the adoption of our State Constitution and our statute laws, with discussions of proposed changes in our State Constitution and laws. For Seniors or graduates.

Both semesters; T. Th., 8 o'clock; two credit hours each semester.

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POLITICAL SCIENCE

With the approval of the instructors involved, courses in *Political Science* may be counted toward a major or minor in *Political Economy* or in *History* and *vice versa.*

I, II. *Introduction to the Study of Government.* The purpose of this course is to familiarize the student with the technical language of the subject. The principal aim throughout is to emphasize the practical working of American federal and state governments. Attention will be given such topics as the distribution of the powers, the organization and functions of the federal executive, of Congress, and of the judiciary, party organization, and the governmental functions of the state and the manner in which they are exercised. As occasion arises comparisons will be made between the government of the United States and of European countries, especially the United Kingdom. Special emphasis will also be laid on recent reform tendencies in American government.

Both semesters, M. W. F., 8 o'clock; three credit hours.

III. *City and County Government.* This course deals with the governmental problems of the American city, town, and county. Attention is given to such subjects as municipal organization, finance, police, sanitation, public works, etc. Special emphasis is given the various efforts to reform city and county government, such as the commission plan, the city-manager plan, and the county commission types. Each member of the course will be expected to examine some local phase or problem of municipal or county government. Wyoming city and county problems receive first attention.

First semester; M. W. F., 11 o'clock; three credit hours.

IV. *European Governments.* This course covers the governmental systems of the European nations including England, Germany, France, Italy, Switzerland, and Russia. An effort will be made throughout to draw comparisons among the various European systems and parties. Lectures and readings.

Second semester; M. W. F., 11 o'clock; three credit hours.

VII. *American Constitutional Law.* A study of constitutional principles and limitations throughout the United States. Lectures, cases, and text-books.

First semester; hours to be arranged; three credit hours.

IX. *International Law.* An outline study of the nature, growth, sources and authority of public international law. A discussion of the general principles of international law and their application to current international problems, national character, diplomacy, the laws and customs of war, the rights and duties of neutrals, with particular reference to the results of The Hague conferences and the settlement by pacific means of international differences. Special at-

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tention is given to the requirements of the Consular Service and the Army.

First semester; M. W. F., 2 o'clock; three credit hours.

X. *World Politics.* The aim of this course is to describe the forces at work in world diplomacy since 1900 which have culminated in the present war. The diplomatic problems arising from the partition of Africa, the opening of Asia, the race for armaments, the maintenance of the Monroe Doctrine, the world peace movement. the problem of the Pacific, and the like are discussed. Particular stress is laid on the position of the United States in world diplomacy.

Second semester; M. W. F., 2 o'clock; three credit hours.

XI, XII. *Theory of Government.* This course deals with the various schemes of government from the time of the Hebrews, Greeks, and Romans, through the Middle Ages, and the period of Hobbes, Locke, Rousseau, Mill, Bentham, and Spencer to the present day. The writings of these and others are studied. Particular attention is given such topics as the classification of governments, the origin of representation, the separation of Church and State, the growth of republican and democratic ideas, federal states, internationalism, American political theories, and the various schemes advanced from time to time for the government of the "world state."

Both semesters, T. Th., 11 o'clock; two credit hours.

XV, XVI. *Elementary Law.* This course aims to give a general outline of the nature, history, and development of the Common Law. It is designed to cover the whole field in brief and to meet difficulties which will confront students in beginning their professional courses. The course meets the recommendations of the Association of American Law Schools. Occasional lectures will be given by leading members of the Wyoming bar. Text-book, Robinson, *Elementary Law* (latest revised edition).

Both semesters; M. W. F., 1 o'clock; three credit hours.

SPANISH

In, II. *Beginning Spanish.* Grammar-drill and practice in easy conversational Spanish for beginners. Castilian standard of pronunciation. Reading of about 100 pages of easy texts and enough written work to fix the fundamentals.

Both semesters; M. W. F., 2 o'clock; three credit hours each semester.

III, IV. *Modern Spanish.* Second year work. Reading and conversation; review of grammar. About 400 pages of modern Spanish will be read in class and several easy stories will be assigned for outside reading.

Both semesters; M. W. F., 1 o'clock; three credit hours each semester.

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ADVANCED SPANISH

Courses V-XII are third year; XV, XVI are fourth year. Other courses will be arranged to suit the demand for Minor or Major work in this language.

V, VI. *Classical Prose and Verse.* A course in the reading of the Spanish Classics. Those taking this course are advised to take course VII, VIII, and if possible IX, X.

Both semesters; hours to be arranged; two credit hours each semester.

VII, VIII. *Prose Composition and Review of Syntax.* Advised for all taking Spanish as Minor or Major.

Both semesters; hours to be arranged; one credit hour each semester.

IX, X. *Spanish Conversation,* following some suitable text. Two hours practice in class and less preparation outside. Advised for all taking Spanish as Minor or Major.

Both semesters; hours to be arranged; one credit hour each semester.

XI, XII. *Spanish Newspaper Reading* (or Commercial Spanish, to suit the class).

Both semesters; hours to be arranged; two credit hours each semester.

XIII, XIV. *History of Spanish Literature.* A course given in English for any students of college rank. Readings of translations and a good history of the Spanish Literature.

Both semesters; hours to be arranged; two credit hours each semester.

XV, XVI. *The Last Century of Spanish Literature; Prose and Verse.*

Both semesters; hours to be arranged; two credit hours each semester. Not offered in 1918-19.

ZOOLOGY

The courses in Zoology aim to meet the needs of the following groups of students: (1) Those who desire one or more courses in the department on account of their general educational value; (2) Those who wish to satisfy the requirements of other departments; (3) To provide the fundamental training for those who wish to specialize in the subject. The courses are arranged with these needs in view. For example in General Zoology I and II, the forms are selected to illustrate general principles of physiology, environmental relations, evolution and development, as well as phylogenetic position.

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Courses I, II, III and IV are advised, and VI, VIII, IX and X are suggested, as suitable for those students who expect to go into human medicine. The same courses excepting IX and X are suggested for students who intend to study veterinary medicine. Courses I, II, VII, IX and X meet the more important needs of teachers. Courses I, II, IV, VIII, IX and X form a suitable series for Animal Husbandry students; courses I, II, VII and IX are suitable for students of Agronomy; while students who major in Zoology should take courses I, II, III or XI, IV or VI, VII and VIII, or IX and X. Students majoring in Botany, Psychology, Economics, Chemistry or Paleontology can usually arrange for a suitable series of correlated minor courses in this Department.

Students majoring in Zoology should regard Botany and Chemistry as preferred minors, and one of these subjects will be required. A second minor may be taken in Psychology, Mathematics, Physics, or Geology, including Paleontology. In addition such students will be expected to take Physiology I and II, should complete two years of English, have a reading knowledge of one modern language other than English, and in consultation with the head of the Department plan their course not later than the beginning of their Sophomore year.

I, II. *General Zoology.* The purpose of this course is to give a fundamental knowledge of the general principles underlying and the methods pursued in the study of animal life. In the laboratory, forms are studied to illustrate these principles rather than to give a comprehensive view of the entire animal kingdom. The course is therefore suitable for all students who are interested in the nature of living things. The first semester is devoted largely to the study of certain types of invertebrate animals. The second semester deals with vertebrates in a similar way, and at the same time more emphasis is laid upon the processes concerned in development and other matters of human interest. Required in courses in Agriculture and Home Economics. Laboratory fee, $1.00 per semester.

Both semesters; recitations, T. Th., 11 o'clock; laboratory work, section (a) T. Th., 8-10 o'clock, section (b) T. Th., 1-3 o'clock; four credit hours each semester.

III. *Vertebrate Zoology.* This course is based upon a study of the fundamental structure and functions of the vertebrate types. In the laboratory dissections and drawings are made of the different systems, and the development of the systems is traced in the different classes of vertebrates. In class work, relationships are considered from the point of view of embryology and paleontology as well as that of comparative anatomy. Pre-requisites, Zoology I and II, or their equivalents. Laboratory fee, $2.00.

First semester; recitations, T. Th., 9 o'clock; laboratory work, T. Th., 1-3 o'clock; four credit hours.

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IV. *Vertebrate Embryology.* This course is a study of the important principles of vertebrate development, with particular reference to domestic animals and man. The chick and pig furnish the chief laboratory material. This course includes some methods of preparing embryological material, a brief resume of early development, a study of differentiation and the development of organs, the relation of embryo to mother; and a good deal of attention is paid to the physiology of embryonic nutrition and other processes of development. Especially adapted to medical and Liberal Arts students, and should be preceded by course III or XI. Laboratory fee, $2.00.

Second semester; recitations, T. Th., 9 o'clock; laboratory work, T. Th., 1-3 o'clock; four credit hours.

V. *Invertebrate Zoology.* This course is designed to give a comprehensive survey of the invertebrates. Representatives from the different phyla are dissected, and a comparative study is made of their structural adaptations, general physiology and behavior as well as their phylogenetic relationship. Pre-requisites, Zoology I and II. Laboratory fee, $2.00.

First semester; recitations, T. Th., 8 o'clock; laboratory work, W. F., 1-3 o'clock; four credit hours.

VI. *Histology.* This course is a study of the fundamental vertebrate tissues, particularly of mammals, and of the microscopic anatomy of organs. There is also considerable practice in fixation, embedding, sectioning, staining and mounting of various tissues. Pre-requisites, Zoology I and II, or Physiology I. Laboratory fee, $3.00.

Second semester; recitations, T. Th., 8 o'clock; laboratory, W. F., 1-3 o'clock; four credit hours.

VII. *Entomology.* On account of their great economic importance, this course aims to give a thorough understanding of the life history and habits of the more important species of insects, and the principles upon which we seek their control. A study is made of the distinctive characters of the different orders and groups, of how they are adapted to survive and multiply, as well as the habits and structural modifications that make different measures of control necessary. Pre-requisites, General Zoology I and II. Laboratory fee, $1.00.

First semester; recitations, M. S., 11 o'clock; laboratory, S., 8-11 o'clock; three credit hours.

VIII. *Parasitology.* This course includes a study of the chief characteristics, life histories, and economic importance of the serious external and internal parasites of domestic animals and man. The laboratory work consists of a study of the structural and functional adaptations characteristic of a parasitic existence. Pre-requisites, General Zoology I and II. Laboratory fee, $1.00.

Second semester; recitations, M. S., 10 o'clock; laboratory, S., 8-11 o'clock, and three other hours to be arranged; four credit hours.

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IX, X. *Organic Evolution and Heredity.* This course consists of lectures, recitations, reference reading, discussions and reports. A brief study is made of the theories which have been proposed to account for the origin of species and attention is given to the lines along which evolution has proceeded. The course then takes up the facts of variation, a study of germ cells with special reference to the problems of heredity, Mendelism and the laws of heredity, other important facts and principles of animal and plant breeding, methods used in improving domesticated animals and plants, and finally the applications of genetics to human development and heredity. Prerequisite, one year's work in Zoology or Botany, or the equivalent. Given in conjunction with the Department of Botany. Primarily for students in Liberal Arts, Education, and Animal Husbandry, and serves as an introduction to Agronomy X. Part of the work for Animal Husbandry students in the second semester will be given by that Department.

Both semesters; M. at 9; W. and F. at 8 o'clock; two credit hours each semester.

XI. *General Embryology.* This course includes some methods of embryological technique, a study of the cell and cell-division, the formation of the germ cells and their behavior in reference to heredity and sex determination, maturation, fertilization, cleavage, the germ layers, the processes of differentiation and of organ formation. Serves as an excellent introduction to courses IX and X and to course IV. Pre-requisites, Zoology I and II. Laboratory fee, $2.00.

First semester; recitations and laboratory work, hours to be arranged; four credit hours.

GRADUATE WORK

Students who have not less than 22 semester-hours to their credit in Zoology, who have a reading knowledge of German or French, and who have completed the elementary courses in the cognate sciences previously specified, may be accepted as graduate students in this department. Any course previously listed, taken in excess of twenty-two semester hours, may be counted toward graduate work.

XXI, XXII. *Zoological Problems.* Students qualified by previous training to do experimental or research work will be assigned definite problems in Zoology or Parasitology.

There are no accurate lists of many of the groups of animals found in our State; the life histories of hundreds of others are not known, and the same may be said of their embryology; the full economic importance of many forms is imperfectly understood, and their behavior and taxonomic relations need to be studied. This illustrates the nature of some of the problems that may be undertaken. After consultation a definite problem will be assigned suited to the needs and previous preparation of the student.

Both semesters; hours and credits to be arranged.

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The Division of Commerce

ADMISSION

Students who are graduates from four year High Schools and who desire to begin Commercial work may enter The One-Year Short Course or the first year of the Preparatory Course in Commerce, being classed as special students.

Students desiring to enter the Collegiate Course in Commerce directly upon entering the University must have had the equivalent of the work in the Preparatory Course in Commerce.

Students who have not graduated from four year High Schools must have completed at least the first and second years of secondary courses before entering the Commercial work.

Students of mature years (over eighteen years of age) may be admitted as special students in Commerce without presentation of the usual High School credentials.

GRADUATION

Those who complete The One-Year Short Course or the regular Preparatory Course in Commerce will receive appropriate certificates.

Students pursuing special courses will be granted certificates, setting forth the amount and character of the work completed.

Those who complete the regular Collegiate Course in Commerce will be granted a diploma. If they desire to continue collegiate study leading toward degrees, they may in consulation with the President and Advisory Committees, outline courses of study leading to the degree sought.

SPECIAL STUDENTS

Students over eighteen years of age, who are not candidates for a degree, will be permitted to enter such classes as they may choose to enter, provided they give satisfactory evidence that they are prepared to profit by the courses desired. No student under eighteen years of age will be

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permitted to enter upon such special work without the written approval of the President.

COURSES OFFERED

A One-Year Short Course in Commerce. This course is designed especially for students who wish to prepare themselves in a short time for clerical positions. To this end the subjects included are only those considered absolutely essential in office work. The content of the subjects is not different from that of the same subjects in the other courses. By omitting other allied subjects and devoting all the time to those listed, the student is enabled to complete them in a shorter time.

A Two-Year Preparatory Course in Commerce. This course is designed to fit students to enter into office work as bookkeepers and stenographers. It embraces a full course of instruction in bookkeeping, stenography and typewriting, and the necessary related subjects preparing students to do efficient office work. Students may enter this course only upon the completion of the first and second years of a regular high school course, except as provided in the fourth paragraph under Admission.

A Two-Year Collegiate Course in Commerce. This course extends through two years of collegiate study, following the two years of preparatory study. It aims to give a broader foundation for intelligently directed activity in modern business, and to prepare the student for the Certified Public Accountant examination described under Accountancy. The course is also intended to fit students for general and court reporting. The two-year Preparatory Course in Commerce, or the equivalent thereof, is pre-requisite.

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ONE YEAR SHORT COURSE

First Semester	Credit Hours	Second Semester	Credit Hours
Bookkeeping A & B	6	Elements of Accounting	6
Stenography A & B	6	Stenography C & D	6
Typewriting A & B	0	Typewriting C & D	0
English I	3	English II	3
Military Drill or Physical Training	0	Military Drill or Physical Training	0
Total	15	Total	15

TWO YEAR PREPARATORY COMMERCIAL COURSE

FIRST YEAR
(Standard of Third Preparatory Year)

First Semester	Credit	Second Semester	Credit
Bookkeeping A	½ unit	Bookkeeping B	½ unit
Stenography A	½ unit	Stenography B	½ unit
English E	½ unit	English F	½ unit
Com. Arithmetic A	¼ unit	Com. Arithmetic B	¼ unit
Typewriting A	½ unit	Typewriting B	½ unit
Military Drill or Physical Training	0	Military Drill or Physical Training	0
Total	2¼ units	Total	2¼ units

SECOND YEAR
(Standard of Fourth Preparatory Year)

	Credit		Credit
Bookkeeping C	½ unit	Bookkeeping D	½ unit
Stenography C	½ unit	Stenography D	½ unit
Mathematics A	½ unit	Mathematics B	½ unit
Typewriting C	¼ unit	Typewriting D	¼ unit
Typewriting E	¼ unit	Typewriting F	¼ unit
Marketing A	¼ unit		
Military Drill or Physical Training	0	Military Drill or Physical Training	0
Total	2¼ units	Total	2 units

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TWO YEAR COLLEGIATE COMMERCIAL COURSE

FIRST YEAR

First Semester	Credit Hours	Second Semester	Credit Hours
Accounting I	4	Accounting II	4
Business Law I	3	Business Law II	3
Business Statistics I*	3	Marketing II	3
English I	3	English II	3
Modern Languages	3	Modern Languages	3
Military Drill or Physical Training	½	Military Drill or Physical Training	½
Total	16½	Total	16½

*Stenography I, three credit hours, may be elected instead of Business Statistics.

SECOND YEAR

	Credit Hours		Credit Hours
Accounting III	5	Accounting IV	5
Economics, P. E. I	3	Money and Banking, P. E. IV	3
Public Finance, P. E. V	2	Railways and R. R. Problems, P. E. VI	2
English XLIII	2	English XLIV	2
Modern Languages	3	Modern Languages	3
Military Drill or Physical Training	½	Military Drill or Physical Training	½
Total	15½	Total	15½

DESCRIPTION OF COURSES

BOOKKEEPING

A, B. This work comprises a general course in standard bookkeeping in connection with actual business practice, and forms a basis for the study of advanced accounting methods. The student is given practical drill in methods pertaining to wholesale and retail business and is taught how to change his books from the double entry form into single entry, and *vice versa*.

Both semesters; M. W. F., 9 o'clock; credit one-half unit each semester.

C, D. This second year's work is a continuation of the first, and the time will be devoted principally to the study of the more complex forms of double-entry bookkeeping as applied in the larger wholesale, jobbing, commission and consignment, and joint-stock establishments. The student is also given work in practical banking, beginning with the opening of a private bank, carrying it through the organization of a state bank, and the conversion of the latter into a national bank.

Both semesters; M. W. F., 10 and 2 o'clock; credit one-half unit each semester.

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TYPEWRITING

A. The touch system is employed. Mastery of keyboard and general knowledge of mechanism of standard machines. Letter writing, with instruction in the proper forms of address, and the correct arrangement of material from rough drafts.

First semester; five times a week, hours to be arranged; credit one-half unit.

B. Speed drills and instruction in care and adjustment of machine. For those studying stenography, drill in transcription of shorthand notes and a continuation of the work in letter writing.

Second semester; five times a week, hours to be arranged; credit one-half unit.

C. Drills in speed writing from manuscript and rapid transcription of shorthand notes, including business letters and miscellaneous matter. Manifolding, tabulating, mimeographing, duplicating and multigraphing. Methods of filing and card indexing.

First semester; five times a week, hours to be arranged; credit one-fourth unit.

D. Rapid transcription of shorthand notes. Rate of thirty-five words a minute from new matter required. Care, use of, and transcription from dictaphone. Construction of legal forms.

Second semester; five times a week, hours to be arranged; credit one-fourth unit.

E. Dictation of business letters directly to typist. Drill in properly constructing letters as dictated. Rate of forty words a minute required.

First semester; five times a week, 1 o'clock; credit one-fourth unit.

F. Rapid dictation of miscellaneous matter, including legal forms, speeches, depositions, etc. Speed sixty words per minute required.

Second semester; five times a week, 1 o'clock; credit one-fourth unit.

(NOTE: The completion of all courses in Typewriting is prerequisite to Stenography I).

STENOGRAPHY

A, B. *Theory of Shorthand.* Mastery and application of fundamental rules and principles. Reviews and tests. Easy dictation and transcription.

Both semesters; M. W. F., 8 o'clock; credit one-half unit.

C, D. *Speed Practice.* Occasional reviews of theory. Dictation and transcription of practice letters. New matter of all kinds, taken at rate of one hundred and twenty-five words per minute and transcribed at rate of thirty-five words per minute, required for completion of course.

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Both semesters; M. W. F., 9 o'clock; credit one-half unit.
(NOTE: Choice may be had among Dement's Pitmanic Shorthand, Dement's Aristography, and Gregg Shorthand).

I. *Court and General Reporting.* Study of contractions and grammalogues especially adapted to court reporting. General instruction in court proceedings and matter contained in various instruments such as indictments, motions, and warrants. Practice dictation of court testimony, speeches, depositions and investigations, with immediate verbal transcription. Practical work is also required and reports must be submitted.

This course may be elected instead of Business Statistics in the Collegiate Commercial Course and counts for credit accordingly.

First semester; M. W. F., 10 o'clock; three credit hours.

MARKETING

A. The development of modern marketing, through the period of no exchange and of direct exchange to the present period of indirect exchange; mediaeval organization of commerce, growth of credit business and of banking, modern organization of commerce; national commercial policies.

First semester; two times a week, 1 o'clock; credit one-fourth unit.

B. A study of present-day marketing methods; trade factors and trade channels; advertising campaigns; sales management; wholesale and retail merchandising; the exchanges and speculation.

Second semester; M. W. F., 11 o'clock; three credit hours.

BUSINESS LAW

I. *Contracts.* A general knowledge of business law is sought from the study of this subject. The main part of the course deals with the two principal kinds of business transactions which are based on agreement,—contracts and sales of property, especially sales of goods. In addition to the work as outlined special written reports will be required from time to time.

First semester; M. W. F., 11 o'clock; three credit hours.

II. *Law Relating to Business Association.* A study of the law relating to representative action, viz., the law of agency, including the important state and federal legislation on labor matters. A detailed comparison of various kinds of business associations, particularly partnerships and corporations; the formation of such associations; modes of action by the association; the consequences of unauthorized action on behalf of the association; the rights and liabilities of the associates between themselves; the interests of the associates in the property of the association; and the rights and remedies of creditors of the association.

Second semester; M. W. F., 11 o'clock; three credit hours.

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ACCOUNTING

I. *Accounting Principles.* A study of the fundamental and universal principles that accountants must use. Interpretation of accounting statements based upon certain main types of bookkeeping. Distinction between capital and revenue; the nature of maintenance and depreciation; the methods of sinking funds; the effect of interest on valuations, and the basis of cost accounting. The application of these principles to the enterprises in which they are conspicuous, such as banking, insurance, transportation and investment.

First semester; four times a week, hours to be arranged; four credit hours.

II. *Accounting Practice.* Practical application of the principles of accounting, following in concrete and practical form the work of the introductory course. Subdivision of profit and loss account; with development of trading account; factory accounting; income accounting, and specific methods of cost accounting. A study is made of the accounting methods for partnership settlements, administration of estates, and bankruptcy proceedings. Other subjects, introduced in Accounting Principles, are further developed in this course.

Second semester; four times a week, hours to be arranged; four credit hours.

III. *Auditing.* The principles governing audit of partnerships and corporations of any magnitude according to approved professional methods. The duties and responsibilities of an auditor; kinds of audits, and the auditor's report. Actual audit of local concerns whenever practicable.

First semester; five times a week, hours to be arranged; five credit hours.

IV. *Accounting Problems.* This course is designed to cultivate analytical power, breadth of view, initiative, and resourcefulness, with regard to accountancy. The problems considered are to be chosen from fields where no definite program of procedure can direct the student in his work. He will be compelled to fall back upon his knowledge of principles, business practice, his power of analysis, and his native judgment.

Second semester; five times a week, hours to be arranged; five credit hours.

BUSINESS STATISTICS

I. *Business Statistics.* Opportunity is offered in this course for studying the principles to be observed in collecting, presenting and interpreting statistics for business purposes. Examination is made of methods of forecasting business conditions and of the commercial, industrial and financial statistics of which they make use. Attention is given to the application of statistics to specific problems.

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The preparation of reports and charts, giving actual practice in collecting and handling statistics and a knowledge of common abuses and errors, is required.

First semester; M. W. F., hours to be arranged; three credit hours.

OTHER REQUIRED SUBJECTS

For description of other courses required in the Preparatory Commercial Course, see courses in the Senior High School.

For other courses in the Collegiate Commercial Course, see courses in the Division of Letters and Sciences.

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The Division of Music

FACULTY

*ALBERT LUKKEN, B. A., *Director and Professor in Vocal Music.*

Mr. Lukken was graduated from the Fremont, Nebraska, Normal, with the degree of Bachelor of Arts. He finished the course in Vocal Music and the Theory of Music in the American Conservatory of Chicago, and also did post-graduate work there. Mr. Lukken has been a voice pupil of the late Frederick W. Root and also of Messrs. Charles W. Clark and Karleton Hackett. He has appeared as soloist with the Chicago Symphony Orchestra, and has sung at many leading musical festivals. Mr. Lukken was head of the Department of Vocal Music in the University of South Dakota for the two years 1913-15.

JOHN LUKKEN, B. S., *Acting Director and Instructor in Voice.*

Mr. Lukken was graduated from the Fremont, Nebraska, Normal, with the degree of Bachelor of Science. He returned later for another year's work of graduate character. He finished the course in Vocal Music and Theory of Music in the American Conservatory of Chicago, and also did post-graduate work there. Mr. Lukken was also in the Voice department of the Leonard-Wilson Music School of Chicago for two years and has been a pupil of Charles W. Weeks and Karleton Hackett.

†ROGER C. FRISBIE, *Instructor in Organ and Piano.*

Mr. Frisbie is a graduate of the Northwestern School of Music, 1912. He has been a church organist and choir-master since 1912.

ROSE LENA RUEGNITZ, Mus. Grad., *Assistant Professor of Music and Instructor in Piano.*

*On leave, second semester, 1917-18.
†On leave, in military service.

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Miss Ruegnitz is a graduate of Northwestern University with the degree of Music Graduate, completing both the course in Public School Music and in Theory and Applied Music. She did postgraduate work there in Composition and Theory under Professor Arne Oldberg, and was also a pupil for four years of Victor Heinze of Chicago and Berlin. She spent a summer abroad, studying Theory with Dr. Elsenheimer of Berlin. She has appeared as soloist with the Chicago Symphony Orchestra and other large organizations.

HELEN M. MAYER, *Instructor in Violin.*

Miss Mayer is a graduate of the Chicago Musical College, and afterwards spent four years in Europe, three of them in Prague as a pupil of Cevcik, and one year in Berlin under Professor Michael Press. From 1909 to 1913, Miss Mayer was instructor in Violin and Piano at Baker University.

CADY KENNEY, *Instructor in Organ and Piano.*

Teachers: Emil Liebling, F. E. Barrows and Allen Spencer, in Piano; John J. Landsbury and Adolf Weidig in Theory; Hamlin Hunt and Wilhelm Middelschute in Organ. Student and Assistant Instructor in Piano and Harmony, Simpson College, Indianola, Iowa, 1905-7; postgraduate student American Conservatory of Music, Chicago, 1910-13. Instructor in Piano and Theory, Baker University, Baldwin, Kansas, 1907; instructor in Piano, Wartburg College, Clinton, Iowa, 1911-13; director of Music and instructor in Piano, Organ and Theory, Christian College, Columbia, Mo., 1913-16; instructor in Piano, Organ and Theory, MacPhail School of Music, Minneapolis, Minn., 1916-17; instructor in Organ and Piano, University of Wyoming since January 1, 1918.

HARRY W. THOMPSON, *Instructor in Brass Instruments.*

ADMISSION

Students entering the Division of Music do so either as regular or special students. For regular students, the requirements for admission to the Division are the same as

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those of the Division of Letters and Sciences. Special students are not subject to these requirements, but may enter at any time and with no previous preparation and may pursue such work as they may elect.

SCOPE

The Division offers courses in the practical and theoretical study of Music, and is designed to fit students for the profession as artists (teachers or theorists.)

It aims at academic standards and methods in the study of Music, and the general plan of the Division is modeled after the Division of Letters and Sciences of the University, with four-year courses leading to a degree.

The Division also offers a two-year course in Public School Music, upon the completion of which the student receives a diploma.

DEGREE

Upon the completion of the 126 credit hours of required and elective work, regular major students of this Division will receive the degree of Bachelor of Music.

Upon the completion of the sixty-three credit hours of the required and elective work for the Public School Music course, students registered for this will receive a diploma.

Certificates will be given for special work with the statement of the amount of work done.

FEES AND EXPENSES

All bills are payable to the Secretary of the University at the beginning of each semester.

No deductions will be made for temporary absences, or lessons discontinued. Only in cases of protracted illness will credit be given for lessons missed.

Pianoforte, Voice, Violin, Organ, each, two half hour lessons a week, per semester (18 weeks), $30.00.

Piano, Voice, Violin, Organ, each, one-half hour lesson a week, per semester, $16.00.

Lessons taken for less than one semester, $1.00 per lesson.

Rent of piano, one hour a day, per semester, $2.00.

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MUSICAL ORGANIZATIONS AND ADVANTAGES

The Orchestra affords an opportunity for practice in ensemble playing. Students playing the violin, cornet, trombone, clarinet, or other orchestra or band instruments are urged to notify the Director upon entering the University, in order to receive a place in the orchestra; and students of other branches are advised to take up an orchestra instrument under the advice of the Director, the practice being of great value to a musician.

In accordance with the best practice, all students in the regular courses are required to attend rehearsals in chorus singing as a means of acquiring sense of rhythm and training the ear. Every trained musician should be able to sing his part in trio or quartette with ease and correctness.

The Girls' Glee Club and the Girls' Mandolin Club, numbering about twenty-five, are important musical organizations composed entirely of young women.

The Men's Glee Club furnishes musical training for the young men of the University.

These organizations furnish drill and ensemble work in addition to that of the orchestra. These societies make occasional concert tours of the State.

The University Band is a voluntary organization, composed mostly of students, but assisted by faculty members, giving training and experience in its field and contributing to the activities of the student body.

One or more of the large symphony orchestras give annual concerts under the auspices of the University and an artist course is also maintained, consisting of recitals by eminent soloists.

Lessons on band instruments are provided without charge to capable students registered in the University. Such student must agree to give faithfully his services to the band while in the University.

A Choral society is also one of the attractions affording opportunity for study of best choral music as well as the obvious training. All students in the music department are required to enroll in this work unless excused by the Director.

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COURSE OF STUDY

The following tabular view covers the required 126 credit hours for the degree of Bachelor of Music. For the purpose of this table, students in this Division are classified under two heads—Instrumental, or those whose major interest is some instrument; and Vocal, or those whose major interest is the voice. In the Freshman year, both groups of students take identically the same course. In the Sophomore, Junior and Senior years there are variations which are indicated by the footnotes following the tabulation of each of these years.

Electives for one to three credit hours per semester may be added by students of approved scholarship standing.

FRESHMAN YEAR

First Semester		Second Semester	
English I (Composition)	3	English II (Composition)	3
Psychology I (Introd.)	3	Psychology II (Educ'l)	3
Music I (Elementary Harmony)	2	Music II (Elementary Harmony)	2
Music III (History)	2	Music IV (History)	2
Music V (Ear Training)	2	Music VI (Ear Training)	2
Applied Music	3	Applied Music	3
Chorus	½	Chorus	½
Military Drill or Physical Training	½	Military Drill or Physical Training	½
	16		16

SOPHOMORE YEAR

English III	3	English IV	3
Music VII (Advanced Harmony)	2	Music VIII (Advanced Harmony)	2
Music IX (History)	2	Music X (History)	2
*Applied Music	4½	*Applied Music	4½
Ensemble	½	Ensemble	½
Chorus	½	Chorus	½
Military Drill or Physical Training	½	Military Drill or Physical Training	½
Electives	3	Electives	3
	16		16

*In the Sophomore year, Vocal students take only three hours each semester in Applied Music. This leaves three extra hours for the year for electives.

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JUNIOR YEAR

Modern Language	3	Modern Language	3
Music XI (Adv. Harmony)	2	Music XII (Music Form)	2
Music XIII (Counterpoint)	2	Music XIV (Counterpoint)	2
Music XV (Methods)	2		
*Applied Music	4½	*Applied Music	4½
**Ensemble	½	**Ensemble	½
Electives	2	Electives	4
	16		16

*In the Junior year vocal students take only three hours each semester in Applied Music and one and one half hours each semester in a Music minor.

**In this year vocal students are not required to take Ensemble (one-half hour each semester), giving them, therefore, one additional hour for the year for electives.

SENIOR YEAR

Modern Language	3	Modern Language	3
Music XVII (Composition)	2	Music XVIII (Composition)	2
Music XXVII (Canon and Fugue)	2	Music XXVIII (Canon and Fugue)	2
Music XXIX (Orchestration)	2	Music XXX (Orchestration)	2
*Applied Music	4½	*Applied Music	4½
Music (Music Minor)	1½	Music (Music Minor)	1½
	15		15

*In the Senior year vocal students take only three hours each semester in Applied Music and one and one-half hours each semester in a Music minor. This leaves three extra hours for the year for electives.

COURSE OF STUDY IN PUBLIC SCHOOL MUSIC

The following tabular view covers the required 63 hours for the diploma in Public School Music. This course fits students for music supervisorships.

Electives for one or two credit hours per semester may be added by students of approved scholarship standing:

FRESHMAN YEAR

First Semester		Second Semester	
English I (Composition)	3	English II (Composition)	3
Psychology I (Introd'y)	3	Psychology II (Educ'l)	3
Music I (Elementary Harmony)	2	Music II (Elementary Harmony)	2
Music III (History)	2	Music IV (History)	2
Music V (Ear Training)	2	Education XXIV (Public School Music)	2
*Applied Music	3	*Applied Music	3
Chorus	½	Chorus	½
Military Drill or Physical Training	½	Military Drill or Physical Training	½
	16		16

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SOPHOMORE YEAR

English III	3	English IV	3
Music VII (Advanced Harmony)	2	Music VIII (Advanced Harmony)	2
Music IX (History)	2	Music X (History)	2
*Applied Music	4½	*Applied Music	4½
Ensemble	½	Ensemble	½
Chorus	½	Chorus	½
Military Drill or Physical Training	½	Military Drill or Physical Training	½
Electives	3	Electives	2
	16		15

*A certain amount of the work in Applied Music will be given as additional Public School Methods, the amount to be determined by the proficiency of the individual student.

OUTLINE OF APPLIED MUSIC FOR VOCAL COURSE

A course in vocal music ordinarily requires four years of study, though some students can complete the course in less time. Students are advanced as rapidly as their time and work admits, and each voice is treated with reference to its individual merits and quality and its needs.

The course will include the study and improvement of breathing and breath control, of tone production, which comprises the correct placing of tone, the blending of registers, the acquirement of additional resonance, increased flexibility of voice, studies in phrasing and enunciation, sight singing, songs of various kinds leading up to the study of opera and oratorio.

All students are required to join the Choral Society, unless excused from such attendance by the vocal instructor, and will be assigned to the study of solo parts when sufficient progress has been made to justify their selection for such work. They are also expected to take part in recitals of the Division of Music if requested.

OUTLINE OF APPLIED MUSIC FOR PIANO COURSE

First Year

Czerny—School of Velocity.
Schmitt—Op. 16 [Con.]
Dornig—Octave Studies, Book I.
Bach—Inventions.
Sonatas by Haydn, Mozart and Beethoven.

Second Year

Cramer—Etudes.
Dornig—Octave Studies, Book II.
Wiehmayer—Scales.
Czerny—Art of Finger Dexterity.
Beethoven—Sonatas.

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Third Year

Czerny—Art of Finger Dexterity [Con.]
Low—Octave Etudes.
Wiehmayer—Finger Technic.
Bach—Well-Tempered Clavichord.
Dancla—Etudes.

Fourth Year

The fourth year of the collegiate course is spent largely in preparing a public recital to be given some time during close of the year. Theoretical courses as outlined must be continued.

OUTLINE OF APPLIED MUSIC FOR VIOLIN COURSE

Kreutzer—Etudes.
Domerc—Studies in Double Stops.
Kayser—Exercises, Book 3.
Fiorillo—Etudes.
Dancla—Etudes.
Rode—Caprices.
Concertos.
Sonatas.
Classical pieces in all positions.

THE ORGAN

Students must display fair ability at the piano and in sight reading before beginning the study of the (pipe) organ.

Elementary instruction, for at least one year, covers Rinck's Organ School or Stainer's Primer of the Organ, Bach's Eight Short Preludes, and Fugues, and easy compositions by modern composers.

The Collegiate Course leads through the Sonatas of Bach and Mendelssohn, and the moderately difficult Preludes, Fugues and Chorales of Bach, to the greater works of Bach, Handel, Rheinberger, Guilmant, and other composers.

Students can be prepared as church organists, special attention being paid to the art of choir accompaniment and the cultivation of a taste for worthy church music according to the best traditions.

DESCRIPTION OF COURSES

I. *Elementary Harmony.* Scales, intervals, formation of triads and sept chords, inversions and cadences. Resolution of dissonant intervals.

First semester; T. Th., 1 o'clock; two credit hours.

II. *Elementary Harmony.* Figured basses, primary and secondary triads, dominant and leading tone sept chords. The inversions with modulations to the five closely related keys.

Second semester; T. Th., 1 o'clock; two credit hours.

III, IV. *History.* A general survey of musical history. Gregorian chant, early canons and folk songs. Textbook, Outlines of Musical History, by Clarence G. Hamilton.

Both semesters; T. Th., 3 o'clock; two credit hours each semester.

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V. *Ear Training.* Theory of Music, ear training and sight singing. This course is required of all regular music students and of all students of the Normal School. It includes a study of scales, clefs and rhythm, gives drill in scale and interval singing, and in melodic and rhythmic dictation. In the College of Education this course is Education XXIII. Second semester XXIV. Materials and teaching methods.

First semester; T. Th., 1 o'clock; two credit hours.

VI. *Ear Training and Sight Singing.* Continuation of Course V. Required of all music students.

Second semester; T. Th., 2 o'clock; two credit hours.

VII, VIII. *Advanced Harmony.* Study of modulations to more remote keys, the secondary seventh chords in major and minor, altered chords.

Both semesters; T. Th., 2 o'clock; two credit hours each semester.

IX, X. *History.* History of religious music. Musical element in mediaeval drama, beginning opera, development of orchestral and instrumental forms, operatic reform, artistic song.

Both semesters; T. F., 9 o'clock; two credit hours each semester.

XI. *Advanced Harmony,* suspensions, passing tones, florid melody, accompaniments.

First semester; hours to be arranged; two credit hours.

XII. *Music Form.* Harmonic analysis, rhythm, motive, section, phrase, etc., rondo and sonata form.

Second semester; hours to be arranged; two credit hours.

XIII, XIV. *Counterpoint.* The five species, combining melodies.

Both semesters; M. W., 2 o'clock; two credit hours each semester.

XV. *Methods.* For Piano students: Methods of teaching piano. Study of touch, technique, studies, and courses.

For vocal students: Methods of teaching voice, voice placing, blending of registers, phrasing, enunciation, etc.

First semester; hours to be arranged; two credit hours.

XVII, XVIII. *Composition.* A study of composition leading from the section and phrase up to the rondo and sonata forms. Textbook, Cornell's Musical Form.

Both semesters; hours to be arranged; two credit hours each semester.

XXI, XXII. *Orchestral Music.* Rehearsals of the University Orchestra.

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Both semesters; hours to be arranged; one credit hour for the whole year.

XXIII, XXIV. *Women's Glee Club.* Drill in three and four part choruses.

Both semesters; hours to be arranged; one credit hour for the whole year.

XXV, XXVI. *Men's Glee Club.*

Both semesters; hours to be arranged; one credit hour for the whole year.

XXVII, XXVIII. *Canon and Fugue.* In the first semester, invertible counterpoint in the octave, tenth and fifteenth. Double counterpoint in the twelfth. Added thirds. Triple and quadruple counterpoints. Imitation. Text, J. F. Bridge. Second semester, all forms of canon and small two and three part fugues. Text (James Higgs.)

Both semesters; hours to be arranged; two credit hours.

XXIX, XXX. *Orchestration.* First semester, study of instruments, range and quality. Second semester, writing for different sections, followed by full score. Text, Prout.

Both semesters; M. W., 3 o'clock; two credit hours.

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The College of Agriculture

The College of Agriculture of the University of Wyoming consists of four divisions; the Resident Divisions in Agriculture and Home Economics, the Extension Division and the Agricultural Experiment Station. While the duties of these divisions differ in their broader aspects, in the practical carrying out of their work there is close co-operation and mutual interdependence.

Resident Division in Agriculture and Home Economics

The College of Agriculture offers courses in general agriculture, animal husbandry and home economics, together with other courses necessary in the laying of broad scholastic foundations for scientific work. The work in the various technical courses, while giving necessary scientific training, is especially adapted to the needs of young people who plan to live in Wyoming. This is particularly true with reference to the investigation of climatic and soil conditions in Wyoming, as well as in the study of live stock problems, for the College recognizes that Wyoming has special problems of its own both in farming and stock raising. The degree of Bachelor of Science is conferred upon students completing the four year courses. Certificates are awarded to those completing the work offered in the Winter Course.

ADMISSION

Entrance requirements for the Agricultural College are similar to requirements prevailing in the other colleges of the University. (See page 44.) Students entering the agricultural courses without one unit of physics and two and one-half units of mathematics will be required to make up these deficiencies after admission. Mature students lacking the necessary entrance requirements may, upon per-

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mission of the Dean of the College of Agriculture, enter the four year college course as "Specials." The Winter Course makes no definite entrance demands although the general requirement is that students be eighth grade graduates.

Agriculture

COURSES OF STUDY

Four-Year College Course. This is the regular college course leading to the degree of Bachelor of Science. Students electing this course must meet all entrance and graduation requirements.

Winter Course. In case there is a sufficient demand for the work, winter courses are offered in Agriculture and Home Economics. These courses are intensely practical and are designed to meet the needs of men and women on the farms and ranches. The work offered covers two semesters of about five months each starting in November and closing in March. Any one interested in work of this nature is urged to take the matter up with the Agricultural College. The course is offered only when a satisfactory attendance is assured.

Short Courses. Short courses in Agriculture and Home Economics of one week's duration are offered as occasion demands, the exact dates of which are advertised. These courses are for farmers and ranchmen and other mature men and women, who are not able to attend the regular courses. The Dean of the Agricultural College would be glad to hear from any one interested in work of this kind.

Movable Schools. When there is a sufficient demand for them, movable schools or short courses are held in various parts of the state in co-operation with the Division of Extension.

FOUR-YEAR COLLEGE COURSE

For All Agricultural Students

FRESHMAN YEAR

First Semester		Second Semester	
English I	3	English II	3
Botany I	4	Botany II	4
Agronomy I	3	Agronomy II	3
Animal Husbandry I	3	Animal Husbandry II	3
Mathematics Ia	3	Mathematics IIa	3
Military Drill	½	Military Drill	½
	16½		16½

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SOPHOMORE YEAR

Chemistry I	4	Chemistry II	4
Agronomy III	2	Agronomy IV	2
Animal Husbandry III	2	Animal Husbandry IV	2
Veterinary III	4	Agricultural Geology VIII	3
Zoology I	4	Zoology II	4
Military Drill	½	Military Drill	½
	16½		15½

For Students Specializing in Agronomy

JUNIOR YEAR

Chemistry VII	5	Chemistry X	5
Agronomy V	3	Agronomy VI	3
Agronomy VII	2	Agronomy VIII	3
Political Economy I	3	Irrigation II	2
Surveying I	2	Elective	2
Military Drill	½	Military Drill	½
	15½		15½

SENIOR YEAR

Agronomy IX	2	Agronomy X	2
Zoology IX	2	Agronomy XII	2
Botany XI	3	Agronomy XIV	2
Elective	8	Veterinary IV	3
Military Drill	½	Elective	5
		Military Drill	½
	15½		14½

For Students Specializing in Animal Husbandry

JUNIOR YEAR

First Semester		Second Semester	
Chemistry VII	5	Chemistry X	5
Zoology IX	2	Zoology X	2
Agronomy V	3	Veterinary IV	3
Physiology I	3	Electives	5
Electives	2	Military Drill	½
Military Drill	½		
	15½		15½

SENIOR YEAR

Animal Husbandry VII	5	Animal Husbandry VIII	2
Electives	10	Veterinary X	3
Military Drill	½	Electives	9
		Military Drill	½
	15½		14½

ELECTIVES

Students should consult with their major professor in choosing electives. Electives outside of the College of Agriculture are often suggested since the well educated man is one with broad foundations.

AGRICULTURAL EXPERIENCE

Students who have not lived and worked upon a farm or ranch for at least one year within four years of the time of entering the Agricultural College as Freshmen will be required to spend at least

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two summer vacations upon an approved farm or ranch before they may become candidates for a Bachelor's degree.

WINTER COURSE

Details concerning the Winter Course will be sent on request. The work includes courses in English; Farm Arithmetic; Civics; Agronomy—Field Crops, Soil and Farm Management; Animal Husbandry—Breeds of Live Stock, Stock Judging, Stock Feeding and Breeding; Animal Diseases and Parasites; Mechanical Drawing and Carpentry; Irrigation and Drainage; and Blacksmithing.

AGRONOMY

I. *Cereal Field Crops.* An elementary and general course in the leading cereal crops; corn, wheat, oats, barley and rye, with special reference to Wyoming conditions; methods of judging and grading grains; germination and vitality of seeds, selection and improvement.

First semester; two recitations, one laboratory per week; recitations, M. W., 9 o'clock; laboratory, M., 1-3 o'clock; three credit hours.

II. *Field and Forage Crops.* A general course for the study and management of the common forage crops, such as legumes, grasses and millets, tuber and root crops; their classification, distribution, adaptation and identification. The methods of planting, tending, harvesting and disposal will be discussed. Two recitations and one laboratory period per week.

Second semester; recitations, M. W., 9 o'clock; laboratory, M., 1-3 o'clock; three credit hours.

III. *Farm Machinery.* A practical study of agricultural implements, tillage, seeding, harvesting, threshing and fertilizing. Two recitations and laboratory to be arranged.

First semester; recitations, M. W., 8 o'clock; laboratory, hours to be arranged; two credit hours.

IV. *Farm Power Machinery.* A study of the working principles of farm motors, the horse, windmill, steam boilers and engines, tractor engines, gasoline and kerosene engines.

Special attention is given to the internal combustion engine, and the difficulties common to the same. Two recitations and laboratory to be arranged.

Second semester; recitations, M. W., 8 o'clock; laboratory, hours to be arranged; two credit hours.

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THE COLLEGE OF AGRICULTURE

V. *Soils.* A comprehensive course dealing with the origin, composition, and properties of soils with particular reference to their management in crop production. The laboratory work consists in practice designed to demonstrate fundamental physical relations. Two recitations and one laboratory period per week. Pre-requisite, Chemistry I.

First semester; recitations, T. Th., 10 o'clock; laboratory, W., 1-3 o'clock; three credit hours.

VI. *The Principles of Soil Productivity.* The laws of crop nutrition and the factors that influence the same; summer fallow; rotation; irrigation; humus; tillage; soil mulch. Two recitations and reference reading per week. Pre-requisite, Chemistry I and Agronomy V.

Second semester; recitations, T. Th., 10 o'clock; laboratory, W., 1-3 o'clock; two credit hours.

VII. *Cost Accounting.* Method of studying the farm business, farm inventories, single enterprise accounts, complete farm accounts and farm records. Special emphasis is given to the interpretation of results and their application in the successful organization and management of the farm. One lecture and one laboratory period per week.

First semester; recitation, Th., 8 o'clock; laboratory, T., 1-4 o'clock; two credit hours.

VIII. *Farm Management.* Farming as a business; labor income; size, diversity and production of business; regions and types of farming; cropping systems; farm lay out; building arrangements; effective use of labor, horses and machinery; marketing; organization and management of successful farms; use of capital and credit; choosing and buying a farm; planning, organization and management of successful farms. Two recitations and one laboratory period per week. Pre-requisite, Agronomy VII.

Second semester; recitations, T. Th., 8 o'clock; laboratory, T., 1-4 o'clock; three credit hours.

IX. *Farm Crops, Advanced Course.* The object of this course is to study the more important principles of crop production based on experimental evidence. Both cereal and forage crops are studied. An effort is made to acquaint the student with the best sources of literature. Two lectures and four hours reference reading per week. Pre-requisites, Agronomy I, II, V.

First semester; T. Th., 11 o'clock; two credit hours.

X. *Soils, Advanced Course.* A study of the more important properties of soils from the theoretical and technical standpoint. The different theories of successful soil management will be discussed. The review of literature and preparation of papers will be an im-

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portant part of the work. Two lectures and four hours reference reading per week. Pre-requisites, Agronomy V, VI.

Second semester; T. Th., 11 o'clock; two credit hours.

XI. *Types of Farming in the United States.* A study of the types and methods of farming best adapted to different sections of the United States and of the natural and economic conditions that make these types best. Two lectures per week and reference work. Pre-requisites, Agronomy VII, VIII. Elective for Seniors.

First semester; hours to be arranged; two credit hours.

XII. *Agricultural Economics.* Historical and comparative agricultural systems. The economic elements in the production and distribution of agricultural wealth, the agricultural market, determination of price, speculation, business co-operation, credit facilities, ownership and tenancy, the relation of the state to agriculture. Two recitations per week and reference reading. Elective for Seniors.

Second semester; M. W., 11 o'clock; two credit hours.

XIV. *Plant Breeding.* The history of plant breeding and its principles as applied to modern agriculture. Two recitations and one laboratory period per week. Pre-requisites, Botany I, II, XI.

Second semester; hours to be arranged; two credit hours.

XVI. *Vegetable Gardening.* Principles of vegetable growing. The care and cultivation of garden crops, outdoor and under glass. Garden crops adapted to various soils, climates and altitudes. Intensive and extensive culture. Principles of truck farming, etc. Two hours recitation, laboratory to be arranged. Elective for Juniors and Seniors.

Second semester; hours to be arranged; two credit hours.

ANIMAL HUSBANDRY

I, II. *Breeds of Live Stock.* The history, comparative merits and adaptability of the leading breeds of horses, cattle, sheep and swine, together with a brief discussion of some of the more important minor breeds.

Both semesters; M. W. F., 8 o'clock; three credit hours each semester.

III, IV. *Stock Judging.* Score-card and competitive judging of horses, beef and dairy cattle, sheep and swine. Work with animals at the college farm, supplemented by stock judging trips to available ranches.

Both semesters; T. Th., 1-4 o'clock; two credit hours each semester.

VII. *Feeds and Feeding.* The composition of plants and animals; classes of feeds and their uses in the body metabolism; the feeding of farm animals with special reference to Wyoming conditions.

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First semester; M., F., 10 o'clock; five credit hours.

VIII. *Studies in Feeding and Management.* Special stock problems taken up and studied in detail with reference to the needs of the student. Station records are largely used as a source of material. Pre-requisite, Course VII.
Second semester; M., F., 10 o'clock; credit hours to be arranged.

IX. *Dairy Problems.* A study of dairy products, the care and management of dairy cattle, methods of herd improvement, the construction of dairy barns, etc.
First semester; hour to be arranged; one credit hour.

X. *Pedigree Work.* A study of methods of recording and extending pedigrees, blood lines that give value to a pedigree, families and individuals prominent as prize winners.
Second semester; M., 1 o'clock; one credit hour.

XI. *Economic Beef Production.* Fattening and breeding beef cattle for the market, methods of feeding and handling and other problems of practical value.
First semester; hour to be arranged; one credit hour.

XII. *Wool.* This course is a study of wool as a finished product of the ranch and its commercial value as determined by its use as a textile raw material. It includes physical and chemical structure of the wool fibre, wool sorting and grading, explanation of terms used in market reports, determination of shrinkage, study of chemicals used in scouring and bleaching, determination of tensile strength, elasticity and humidity, brief outline of the processes and products of wool manufactures, detection of wool adulterants. Pre-requisite, Chemistry VII. Electives for Junior or Seniors.
Second semester; M. W., 2 o'clock; two credit hours.

VETERINARY SCIENCE AND BACTERIOLOGY

III. *General Bacteriology.* This course consists of lectures and laboratory work and is designed to acquaint the students with the fundamentals of the science both in theory and laboratory practice, enabling them to make bacterial counts of water, milk, etc. Two lectures a week cover the evolution and general principles of bacteriology. Some time will also be given to a study and discussion of the hygenic and pathological relations of this science to animals and man as well as the subject of immunity. Laboratory fee, $5.00.
First semester; lectures T. Th., 10 o'clock; laboratory, T. Th., 1-3 o'clock; four credit hours.

IV. *Veterinary Elements.* This course embraces the study of anatomy, physiology and common accidents and diseases of live stock.

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Second semester; M. W. F., 10 o'clock; three credit hours.

V. *Household Microbiology.* This course deals with the relation of micro-organisms to household affairs and provides the student with a knowledge of the fundamental guiding principles of the subject, and the manner in which many practical household problems have their foundation in bacteriology. Laboratory fee, $3.00.

First semester; recitations, T. Th., 8 o'clock; laboratory, F., 1-4 o'clock; three credit hours.

VI. *Advanced Bacteriology.* This is strictly a laboratory course dealing with sero-therapeutics, the preparation of sera and their application in treatment and control of disease. A desirable course for those intending to take up the study of human or veterinary medicine. Open to those who have had Veterinary III or its equivalent. Fee, $5.00.

Second semester; hours to be arranged; four credit hours.

IX. *General Pathology.* This course consists of lectures and laboratory work, covering the study of the morbid changes in various tissues as the result of disease, supplemented so far as possible by demonstrations and laboratory study of fresh and museum specimens. Pre-requisites, Histology, Physiology and Veterinary III.

First semester; hours to be arranged; four credit hours.

X. *Contagious and Infectious Diseases.* A course that logically follows Veterinary III and IV and consists of lectures and recitations on contagious and infectious diseases of livestock. Whenever possible, students will be given an opportunity to see cases in point and take part in the treatment. Experience will also be given them in vaccination for blackleg and the use of anti-hog-cholera serum. Prerequisites, Veterinary III and IV.

Second semester; M. W. F., 8 o'clock; three credit hours.

XI. *Bacteriology for Engineers.* Covering the general morphology, development and chemical and physical properties of bacteria; preparation of culture media, staining, mounting, microscopical examination and special methods of identification of the principal water-borne pathogenic bacteria; general methods and their application in quantitative and qualitative analyses and sewage purification. Laboratory fee, $5.00.

First semester; lectures, hours to be arranged; laboratory, hours to be arranged; four credit hours.

XIII-XIV. *Free Clinic.* With the establishment of a half day free Veterinary Clinic, opportunity will be given students to become familiar with methods of diagnosis, treatment, etc., of ordinary diseases and accidents among animals.

Both semesters; hours to be arranged; credit hours to be arranged.

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Home Economics

HISTORY AND GENERAL ANNOUNCEMENT

In 1907 the University established a course in Domestic Economy leading to the degree of Bachelor of Science. The entrance requirements were made the same as for the College of Liberal Arts. For the purpose of administration, the department was allied with the College of Agriculture and Mechanic Arts. In 1908 the department was transferred from the lecture room in Science Hall to the new laboratories in Woman's Hall.

The name of the Department was changed from Domestic Economy to Home Economics in order to meet the requirements of the new nomenclature first given by the Lake Placid Conference of Home Economics, and now accepted by the American Home Economics Association.

The courses are planned for no one class of women. It is hoped that they may appeal to the most womanly side of all women. By the practical and scientific study of problems in right living and the practical application of science and art in home-making, women will come to see the best in home life; to recognize that economics had its foundation in domestic relations, and to learn how to deal with those relations; to know that science is of great importance in all that pertains to right living; and that art has no higher use than to purify and beautify every-day subjects. The young women who receive this training will be better prepared for the manifold interests of home and professional life, for adequate cultivation of the body, mind and spirit —the main object of all education.

The general course outlined below will equip teachers for positions in which they must deal with both Domestic Art and Domestic Science.

Those who wish to be more fully equipped to teach Domestic Science as a special subject will take the group of courses outlined for that purpose.

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Those who wish to teach Domestic Art as a special subject will take the group of courses outlined for that purpose.

HOME ECONOMICS ELECTIVE COURSES

Students in the College of Liberal Arts or other Divisions are permitted to include among their electives such courses in Home Economics as they are prepared to pursue.

VOCATIONAL COURSE

A grouping of courses is given below for those who wish to remain in residence for only two years and yet wish to obtain vocational training in Home Economics. The satisfactory completion of this Vocational Course will entitle the student to a certificate covering the work done.

GENERAL COURSE

The following tabular view covers the required credit hours for the degree of Bachelor of Science. This course aims to give a liberal as well as a technical education.

FRESHMAN YEAR

English I	3	English II	3
Chemistry I	4	Chemistry II	4
German or French I	3	German or French II	3
Home Economics I	2	Home Economics II	2
Home Economics III	3	Home Economics IV	3
Physical Training	½	Physical Training	½
	15½		15½

SOPHOMORE YEAR

Home Economics V	3	Home Economics VI	3
Zoology I	3	Zoology II	3
Household Physics	3	Home Economics VIII	3
Home Economics VII	3	Chemistry VI	3
German or French	3	Elective	3
Physical Training	½	Physical Training	½
	15½		15½

JUNIOR YEAR

Chemistry VII	5	Chemistry VIII	5
Bacteriology	3	Botany A	3
Political Economy XI	3	Political Economy XII	3
Home Economics XI	3	Home Economics XIV	3
Electives	2	Electives	2
	16		16

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SENIOR YEAR

Home Economics XIII	3	Home Economics XII	3
Electives	13	Home Economics XVI	3
		Electives	10
	16		16

SPECIAL DOMESTIC SCIENCE COURSE

The following is a course designed for greater specialization in Home Economics Science.

FRESHMAN YEAR

This year is the same as in the General Home Economics Course.

SOPHOMORE YEAR

Home Economics Va	3	Home Economics VIa	3
Zoology I	3	Zoology II	3
Household Physics	3	Chemistry VI	3
German or French	3	German or French	3
Elective	3	Home Economics VI	3
Physical Training	½	Physical Training	½
	15½		15½

JUNIOR YEAR

Bacteriology V	3	Botany IIa	3
Chemistry VII	5	Chemistry VII	5
Home Economics XV	2	Political Economy XII	3
Political Economy XI	3	Electives	5
Electives	3		
	16		16

SENIOR YEAR

Education XV	5	Home Economics XVI	3
Home Economics XIX	2	Electives	13
Home Economics IX	3		
Electives	5		
	15		16

SPECIAL DOMESTIC ART COURSE

The following course leads to greater specialization in textiles, clothing and fine arts in Home Economics.

FRESHMAN YEAR

This year is the same as in the General Home Economics Course.

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SOPHOMORE YEAR

French or German	3	French or German	3
Zoology I	3	Zoology II	3
Home Economics XIII	3	Home Economics VIIIa	3
Home Economics VII	3	Home Economics VIIIb	3
Home Economics VIIa	3	Elective	3
Physical Training	½	Physical Training	½
	15½		15½

JUNIOR YEAR

Home Economics XI	3	Home Economics XII	3
Political Economy XI	3	Political Economy XII	3
Home Economics XXV	3	Home Economics XXVI	3
Home Economics XXVII	2	Home Economics XXVIII	2
Electives	5	Electives	5
	16		16

SENIOR YEAR

Home Economics XIIIa	3	Home Economics XIIa	3
Home Economics IX	3	Electives	13
Electives	10		
	16		16

SPECIAL VOCATIONAL COURSE

Enough of the technical work is included in this course to fit women for the trades of dressmaking and catering.

FRESHMAN YEAR

English I	3	English II	3
Home Economics I	2	Home Economics II	2
Home Economics III	3	Home Economics IV	3
Home Economics XIII	3	Home Economics VIIIa	3
Home Economics XXV	3	Home Economics VIIIb	3
Physical Training	½	Physical Training	½
	14½		14½

SOPHOMORE YEAR

Home Economics IIIa	3	Home Economics IV	3
Home Economics XI	3	Home Economics XII	3
Home Economics XV	2	Home Economics XIIa	3
Home Economics XIX	2	Home Economics XXVIII	2
Home Economics IX	3	Elective	6
Home Economics XXVII	2	Physical Training	½
Physical Training	½		
	15½		17½

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I. *Clothing.* A fundamental course in hand and machine sewing; a study of the cutting, making and buying of various types of undergarments. Students provide material subject to the approval of the instructor. This course or its equivalent is pre-requisite to all clothing courses. Fee, $1.00.

First semester; T. Th., 10 to 12 o'clock; two credit hours.

II. *Principles of Design and Applied Design.* Study of line, composition, massing tone distribution, and color harmony. Application of decorating design of home problems by means of applique. stencil, wood block prints and needle craft. For first year students.

Second semester; M. W., 10-12 o'clock; two credit hours.

III. *Foods.* An introduction to the study of foods from a scientific and economic aspect. The food principles are considered as to composition, function, place in the diet and how affected by heat, acids and alkalies. A thorough study is made of the preservation of foods and carbohydrates. Two lectures or recitations per week. Laboratory periods, two continuous hours, two days per week. For first year students. Fee, $3.00.

First semester; first section M. W., 1-4 o'clock; second section F., 1-4 o'clock; S., 9-12 o'clock; three credit hours.

IIIa. *Foods.* This course is designed for students pursuing the vocational course in Home Economics. Emphasis is placed on technique, menu making and serving. Pre-requisite, courses III, IV. For Sophomore students. Fee, $3.00.

First semester; M. W., 8-11 o'clock; three credit hours.

IV. *Foods.* Continuation of course III, including the study of proteins and fats, practical menus and dietary standards, serving of meals. Two lectures a week. Laboratory periods, two continuous hours two days per week. For first year students. Fee, $3.00.

Second semester; first section M. W., 1-4 o'clock; second section F., 1-4 o'clock; S. 9-12 o'clock; three credit hours.

V. *Foods.* The aim of this course is to elaborate the principles taught in Courses III and IV. Special topics are assigned for further investigation. Two laboratory periods, three hours each. Reports and collateral reading. Pre-requisites, Home Economics III and IV and Chemistry I and II. For second year students. Fee, $3.00.

First semester; T. Th., 1-4 o'clock; three credit hours.

VI. *Dietetics.* A course given to the scientific study of foods as they relate to the dietary standards of families under various conditions of health and environment. Study of dietary standards of various countries, balanced rations, diet as influenced by age, sex and occupation, planning of dietaries and serving of meals, dietetic treatment in disease and metabolism of carbohydrates, protein and fats. Two laboratory periods per week, two hours each. Two lectures

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per week. For second year students. Textbook, *Sherman's Chemistry of Food and Nutrition.* Fee, $3.00.

Second semester; T. Th., 1-4 o'clock; three credit hours.

VII. *Houseplanning and Interior Decoration.* Study of building sites, materials and cost of dwellings; plumbing, heating and lighting systems; designing and furnishing interiors. Pre-requisite H. E. II.

First semester; T. Th., 9 o'clock and M. W., 10-12 o'clock; three credit hours.

VIIa. *Freehand Drawing.* Drawing from objects and models as a basis for representation, sketches from nature to develop appreciation of beautiful lines and tones.

First semester; hours to be arranged; three credit hours.

VIII. *Costume Design.* The study of principles of design and color harmony as applied to dress, selection of materials, colors and designs to meet individual needs, direct application to drafting: pattern making and drafting. Pre-requisite H. E. II. Fee, $1.00.

Second semester; hours to be arranged; three credit hours.

VIIIa. *Costume Design.* A study of form sketching, constructive design and color harmony in relation to historic and modern costume. Illustrated problems to be developed in materials in Course VIIIb. Fee, $1.00.

Second semester; hours to be arranged; three credit hours.

VIIIb. *Drafting and Pattern Making.* Drafting of foundation patterns and modifications, draping in tissue and tarletan. Pre-requisite Course II. Either VIII or VIIIa and VIIIb are pre-requisite to all clothing courses. Fee, $1.00.

Second semester; hours to be arranged; three credit hours.

IX. *Evolution of the Family and the Home.* Study of primitive man, tree dwellers, cave dwellers, origin of races, Aryan, Greek, Roman, Celtic, Germanic, Anglo-Saxon civilization, woman's share in these in colonial and modern civilizations. The rise of the modern family emphasizing woman, her economic function and duties to the family and society.

First semester; M. W. F., 8 o'clock; three credit hours.

X. *Household Management.* Course aims to define the profession of home making. Emphasizing woman as a purchaser, chief executive officer, conserver of health, financier and educator. Principles are directly applied to housekeeping.

Second semester; M. W. F., 8 o'clock; length of housekeeping periods depend upon number of students taking the course; three credit hours.

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XI. *Clothing.* Principles of costume design and pattern making applied to the cutting and making of suitable lingerie, wool, and silk dresses; consideration of quality, cost and suitability of materials. Pre-requisite Courses I and II, and either VIII or VIIIa and VIIIb. Fee, $1.00.

First semester; M. W., 1-4 o'clock; three credit hours.

XII. *Clothing.* This course includes the making of an afternoon or evening dress, or silk blouse and a tailoring problem. The student is to express her ability to choose materials from her previous training in textiles, and her efficiency in design and dressmaking from her work in the previous design and dressmaking courses. Prerequisite Courses I, II, VIII, or VIIIa and VIIIb, XI and XIII. Fee, $1.00.

Second semester; M. W., 1-4 o'clock; three credit hours.

XIIa. *Millinery.* Study of processes and materials used in millinery. Practice in designing, making and trimming hats. The artistic and economic phases of the subject will be emphasized.

Second semester; hours to be arranged; three credit hours.

XIII. *Textiles.* A study of the development of the textile industries from primitive times to the present, considering their historic and economic importance. Method of manufacture of the various fibers, identification and grading of fabrics, physical and chemical testing for quality and adulterating, cleaning, laundering and dyeing.

First semester; M. W., 8 o'clock, Friday 1-4 o'clock; three credit hours.

XIIIa. *Clothing Shop Practice.* Students will assume the responsibility of designs and making dresses to order. Details to be arranged by the instructor in charge. For Seniors taking the Domestic Art Course.

First semester; hours to be arranged; three credit hours.

XIV. *Home Problems.* This course deals with the sanitary and hygienic conditions of the home, including history of sanitation, water supply, sewage disposal, heating, plumbing, care of the sick and diets in disease. First aid is given by physical culture instructor. Care of the sick by nurses at the Ivinson Memorial Hospital.

Second semester; T. Th., 9-11 o'clock, W. 4 o'clock; three credit hours.

XV. *Sanitation.* The course is divided into three parts, namely, sanitary science, practice and inspection, as related to the home and to the community. Emphasizing soil, site, air, ventilation, heating, water and food supply, plumbing, disposal of sewage, infection and disinfection.

First semester; hours to be arranged; two credit hours.

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XVI. *Nutrition.* Continuation of Course VI with special emphasis placed upon the metabolism of proteins, fats, carbohydrates and mineral salts; a study of the latest nutritional investigations and the application of these to dietaries for all classes of people. Prerequisites Chemistry I, II, VII, VIII. Three lectures a week. For Seniors.

Second semester; M. W. F., hours to be arranged; three credit hours.

XVII. *Theory and Practice of Teaching Domestic Science.* The object of this course is to give the purpose of Domestic Science in Education, its relation to other subjects in the school curriculum and the methods of teaching it in schools of all grades. This course includes observation of classes, the writing of lesson plans, the management and care of the department and teaching classes of all grades under supervision, as well as planning courses of study and the equipment of laboratories at various costs. For fourth year students, being Education XV for Home Economics majors.

First semester; recitations, M. W., 11 o'clock; laboratory hours to be arranged; five credit hours.

XVIII. *Theory and Practice of Teaching Domestic Science.* This course is a continuation of XVII. All teachers of Home Economics Science are required to have one year of practice teaching. For fourth year students, being Education XVI.

Second semester; recitations, M. W., 11 o'clock; laboratory hours to be arranged; five credit hours.

XVIIa. *Theory and Practice of Teaching Domestic Art.* The aim of this course is to give the purpose of Domestic Art in Education, its relation to the curriculum; methods of teaching it in schools of all grades, planning courses of study and equipment, presenting lesson plans and teaching classes under supervision. For fourth year students, being Education XVI for Home Economics majors.

Second semester; hours to be arranged; five credit hours.

XVIIIa. *Theory and Practice of Teaching Domestic Art.* This course is a continuation of XVIIa. Teachers of Domestic Art are required to take one year of practice teaching. For fourth year students, being Education XV for Home Economics majors.

Second semester; recitations, M. W., 11 o'clock; laboratory hours to be arranged; five credit hours.

XIX. *Nutrition.* This course aims to give the fundamental principles necessary for a clear understanding of the laws governing health, i. e., prevention of diseases through right living.

XIXa. *Care of the Sick.* This course includes work in the care of the sick room, care of the patient and the preparation of diets for various diseases.

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XX. *Clothing.* This course includes the cutting, fitting and making from patterns of shirt waists and unlined dresses in cottons. Students provide materials and patterns subject to the approval of the instructor. No pre-requisites. Fee, $1.00.

Second semester; S. 8-12 o'clock; two credit hours.

XXI. *Survey Course in Textiles.* The textile fibers from their growth through manufacture are studied to ascertain the wearing qualities and true values of the materials. Hygiene of clothing, cleaning of clothes, and proper storing of woolen materials, furs, rugs, etc., are given consideration. Various simple garments are made chiefly by hand and such as could be made by students in rural schools.

First semester; T. Th., 8-10 o'clock; two credit hours.

XXII. *Survey Course in Foods.* The aim of this course is to give to teachers a knowledge of the fundamental principles underlying foods, and enough practical work of such nature, which may be used in any school of simple equipment. Fee, $3.00.

Second semester; T. Th., 8-10 o'clock; two credit hours.

XXIII. *Elementary Course in Nutrition.* This course is arranged for Correspondence Study students. Textbook, Stiles' *Nutritional Physiology.* Two credit hours.

XXIV. *Elementary Course in Clothing.* This cource is arranged for Correspondence Study students. Textbook, *Baldt's Clothing for Women.* Two credit hours.

XXV. *History of Art.* A study of painting, sculpture and design as developed throughout the ages.

First semester; hours to be arranged; three credit hours.

XXVI. *Architecture and Furniture.* Study of the historic development of architecture, ornament and furniture, with reference to their influence on modern styles.

Second semester; hours to be arranged; three credit hours.

XXVII. *Handiwork.* This course includes the carrying out of color harmony applied to structural and decorative design in the making of reed and raffia baskets, carved trays, knotting, netting and macrame articles, weaving, lace making, etc. Pre-requisite Home Economics II.

First semester; hours to be arranged; two credit hours.

XXVIII. *Handiwork.* A continuation of Course XXVII.

Second semester; hours to be arranged; two credit hours.

XXIX. *Foods* (for nurses). Survey course in food leading to a survey course in dietetics. The aim is to give to student nurses the fundamental facts concerning foods. Time will not permit detail

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work. Two lectures one-half hour each and two laboratory periods of one and one-half hour each.

First semester; hours to be arranged; two credit hours.

XXX. *Dietetics* (for nurses). Survey course emphasizing the main facts concerning the food principles, their metabolism and amounts essential to a normal diet. Two lectures half hour each and two laboratory periods, one and one-half hour each.

Second semester; hours to be arranged; two credit hours.

XXXI. *Sanitation* (for nurses). Course aims to give fundamentals pertaining to water supply, sewage disposal, plumbing, heating, lighting, disinfectants, cleaning agents and care of food, the home.

First semester; hours to be arranged; one credit hour.

Extension Division

Under the terms of the Smith-Lever Act, signed in May, 1914, Wyoming receives an annual Federal appropriation for Co-operative Extension work in Agriculture and Home Economics. The Agricultural College of the State University administers the system for the State through the organization of an Extension Division with a director and a staff of demonstrators and agents. Certain Bureaus of the Department of Agriculture also carry on special demonstrations in Wyoming in connection with the Extension Division.

The Legislature of 1915 supplemented the Smith-Lever Act and other Federal appropriations by providing continuing State appropriations for the Extension Division of the College of Agriculture and by authorizing counties to co-operate with the Agricultural College in county demonstration work.

The Division of Extension of the Agricultural College is organized to give educational service and practical demonstrations in Agriculture and Home Economics to all of the people of the state who are unable to attend the University. The work is co-operative, representing the Federal Government, the State of Wyoming, and the various counties of the state. It is financed by appropriations from the

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Federal Government, from the State, from county appropriations, from appropriations by school boards, and by contributions.

The projects being conducted through the Extension service are as follows:

Administration. The administration of Extension Work in Agriculture and Home Economics is under the supervision of a Director, with offices in Agricultural Hall.

County Agricultural Agent Work. Nineteen counties are organized for County Agent Work, as follows: Albany, Big Horn, Campbell, Converse, Crook, Fremont, Goshen, Hot Springs, Johnson, Laramie, Lincoln, Natrona, Niobrara, Park, Platte, Sheridan, Uinta, Washakie, and Weston. Men trained in agriculture, known as County Agricultural Agents, are located in these counties, with headquarters usually at the county seat. The object of this work is; to give instruction and demonstrations in agriculture in order to secure the adoption of better farm practices; organization, and administration for the purpose of increasing farm profits, and developing a richer social and intellectual country life.

Boys' and Girls' Club Work. The object of this work is to train boys and girls to produce for home consumption and to market profitably better crops and farm animals; to eliminate waste on the farm and in the home; to produce economically better food, clothing and farm equipment; and, further, to train the boys and girls in rural life interests, and rural leadership and co-operation.

This work is organized and conducted in all parts of the state under the supervision of a State Club Leader. Local leaders are in charge of the work in various counties and communities.

County Home Demonstration Agent Work. Women trained in Home Economics are placed in counties, with headquarters usually at the county seat. There are four counties in the state now organized for this work, namely:

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Big Horn, Laramie, Lincoln, and Platte. The object of the work is to organize, correlate and conduct Extension Work with the women of the county for the purpose of giving instruction by means of demonstrations, personal conferences, lectures, publications, correspondence, and otherwise, concerning foods, fabrics, home architecture and decoration, household management, sanitation, home industries, etc. The plan is to provide helpful service for the women through County Home Demonstration Agent Work similar to that provided for the men through the County Agent Work.

Home Economics. This department is separate from the County Home Demonstration Agent Work, and is provided to give instruction and assistance to women of the state in counties where there is no County Home Demonstration Agent.

Dairy Extension Work. The purpose of this line of Extension Work is to encourage the development of the dairy industry in Wyoming by assisting County Agricultural Agents with their special dairy problems, and, further, to assist farmers in purchasing dairy stock in eastern centers, aiding in the exchange of sires, building of silos, organizing of creameries, organizing of cow testing associations, and the construction of farm buildings, and also to assist the creameries of the state in their manufacturing problems.

Extension Work in Animal Husbandry. The object of this service is to give instruction and demonstrations in Animal Husbandry, including feeding, breeding and marketing; the improvement of live stock; the formation of bull clubs; the introduction of pure-bred sires; the improvement of sanitary conditions on the open range and about the farmstead and ranch. It demonstrates the value of proper feeding, the importance of feeding more stock for the market, the necessity of raising more feed for winter use; the building of silos, and the value of ensilage as a feed for cattle.

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Extension Work in Crops and Soils. The purpose of this work is to give information and practical demonstrations in methods of soil improvement, drainage, irrigation, cultivation, and in ways of increasing the productivity of the soil; to introduce better varieties of crops; to demonstrate practical methods of crop improvement—rotation, standardization and marketing; and to assist in the control and eradication of insect pests and plant diseases.

Extension Work in Farm Management Demonstrations This work is for the purpose of; first, demonstrating to farmers and ranchmen in connection with their own farms and ranches a method of summarizing and analyzing the farm business, as a means of measuring the profit or loss in conducting it, and of deciding upon modifications which promise to increase the net income, and, second, to demonstrate to farmers the importance of an efficient organization and administration of the farm business, and the relation thereto of certain factors such as size of business, good crops, good livestock, and diversity of business; third, to increase the effectiveness of County Agent Work by assisting the men in their special problems in Farm Management.

Extension Work in Wool. The object of this line of Extension Work is to assist the sheepmen of the state by giving lectures at meetings of sheepmen and farmers who are interested in the production of wool, and to demonstrate the value of organization in the grading and marketing of wool, the installation of improved shearing methods and shearing sheds, and other problems related to the wool industry.

Farmers' Institutes. Farmers' Institutes are held for the purpose of giving instruction and demonstrations with reference to local problems in Agriculture and Home Economics in any town or community where the people desire such assistance. The object is to give practical information and demonstrations in all of the lines of Extension Work above mentioned.

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Farmers' Short Courses. This line of Extension Work is similar to that of Farmers' Institutes, except that it covers a longer period of time, usually from three to five days. This extended time gives opportunity for more detailed demonstration work in Agriculture and Home Economics. Short courses may be conducted in any community where the people desire such work.

Teachers' Institutes. Instructors in Agriculture and Home Economics are sent, upon request, to the various County Teachers' Institutes insofar as qualified instructors are available. Special attention is given to Boys' and Girls' Club Work.

State and County Fairs. An effort is made through Extension Work to assist the people in the various counties in conducting their County Fairs by furnishing judges and speakers to give lectures and demonstrations, by making exhibits of Boys' and Girls' Club Work, etc. At the State Fair, exhibits are made illustrating the work of the University and the various departments, the College of Agriculture, the Experiment Station and the Extension service. Lectures and demonstrations are sometimes given, presenting the practical application of the teaching of the various branches of the Agricultural College and the Department of Agriculture.

The Wyoming Farm Bulletin. This is a monthly publication issued by the Division of Extension of the Agricultural College, containing articles of especial value to farmers and ranchmen of the state. Special attention is also given to the problems of the home. This bulletin is sent free to those residents of the state who desire it. Applications should be made to the Division of Extension, Agricultural College, Laramie, Wyoming.

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The Agricultural Experiment Station

The Wyoming Agricultural Experiment Station is financed largely by the two funds received from the United States Government; the Hatch fund of fifteen thousand dollars used for general investigational work and the Adams fund of an equal amount devoted to the carrying on of research work under projects approved by the department at Washington. The Federal rulings governing these two funds provide that they must be spent at the Agricultural College, hence it has not been possible to use any of this money in the establishment of sub-stations, so badly needed in various parts of Wyoming. Funds for this purpose must come through state appropriation.

The Agricultural College and the Experiment Station are so closely related that it is often difficult to maintain a clear understanding of their functions, although it may be said in a general way that the College is organized to teach while the Station is organized to carry on investigational work in agricultural and the related sciences. The Station offers splendid laboratory facilities for the work of the College in connection with the agricultural experimental work.

The results of Station research work are published in bulletin form and given a wide distribution both in Wyoming and in other states. An annual report is also pub lished each year containing a financial statement of the Station funds, together with a brief resume of work accomplished by the various departments.

Two farms, one in charge of the Agronomy Department and the other belonging to the Animal Husbandry Department are operated as laboratories for the carrying on of College and Station work. The Experiment Station exists for the purpose of aiding farmers and ranchmen in every way possible and the members of its staff are always glad of opportunities to aid in the solution of Wyoming agricultural problems.

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The College of Engineering

The College of Engineering of the University is designed to afford instruction to those who wish to fit themselves for active work in various engineering lines. The demand for trained engineers in the State of Wyoming, with its resources in lands and mines, its railroads and irrigation systems for the development of the state affords ready employment to young men technically prepared to meet Wyoming conditions.

The College of Engineering consists of the following divisions:

1. The Division of Mechanical and Electrical Engineering.
2. The Division of Civil and Irrigation Engineering.
3. The Division of Mining Engineering.

ADMISSION

The requirements for admission to all divisions of this College are the same as for other Colleges of the University, except that in Mathematics three units (Algebra, 1½ units; Plane Geometry, 1 unit; Solid Geometry, ½ unit) are required and in Science one unit of Physics is required. (See page 44.)

DEGREE

The degree of Bachelor of Sciences is conferred upon any student completing the 126 hours in any of the four-year courses of study in the three divisions of this College.

For advanced degree see page 52.

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Mechanical and Electrical Engineering

GENERAL STATEMENT

A four-year course in engineering should first provide a training in fundamental principles, and then as much specialized instruction as is possible in the time allotted. This is the plan on which the courses in Mechanical and Electrical Engineering are designed.

The Freshman and Sophomore years of the two courses are identical and the student need not decide in which course he desires to take his degree until the beginning of the Junior year. During this time the subjects studied are mathematics, English, elementary mechanical drawing, chemistry, physics, descriptive geometry, shopwork, surveying and the kinematics of machinery, preparatory to machine design in both the mechanical and electrical fields Surveying is required in order that the student may obtain such instruction in the use of surveying instruments and the principles of topographical engineering as he may be called upon to apply in the practice of Mechanical or Electrical Engineering. Mechanics, also a fundamental study, is taken in the Junior year.

The fields of the Mechanical and Electrical Engineer are closely related. The connection is so close, in fact, that it is impossible to keep them entirely separated, and this is recognized in the required work of the Junior and Senior years of these courses, when the professional subjects are pursued. The Mechanical Engineer studies such Electrical Engineering subjects as electrical measurements, direct currents and alternating currents, and the Electrical Engineer studies such Mechanical Engineering subjects as the thermodynamics of steam and gas engines and boilers. These subjects are all very closely related in the consideration of power transformation and transmission. Both the Mechanical and Electrical Engineer study such subjects as materials of construction, hydraulics, the law of contracts and specifications and others selected from elective studies.

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In all the work a strong foundation of theory is laid, while as much practical work as possible is given in the Engineering laboratories and shops and in the draughting room. Thus the theoretical and practical sides of engineering are equally emphasized. Stress is laid on original design as a means for the development of initiative.

EQUIPMENT

Division Library.—The Mechanical and Electrical Engineering Library now comprises over 500 volumes and additions are constantly being made. Part of the collection consists of files of engineering periodicals and the department subscribes to the leading journals. The department is fortunate in possessing a complete file of The Transactions of the American Society of Mechanical Engineers. Students have free use of the library and have direct access to the shelves. They have also the privileges of the General Library of the University, which is described elsewhere.

The Shops are equipped with the necessary tools and machinery for the building of complete machines, from the making of patterns and casting of parts from them to the assembling of the finished machine. They are four in number, comprising the wood shop, the foundry, the forgeshop and the machine shop.

The Wood Shop contains eighteen individual benches, each equipped with wood-working tools, six wood-turning lathes with tools, one twenty-four-inch planer, one jig saw, one hand saw, one circular saw, one boring machine, one variety wood worker, one pattern maker's trimmer, one mortising machine, one pony planer and one grindstone. Connected with the wood shop is a finishing room.

The Foundry is equipped for making castings in iron and brass. It contains a Whiting cupola having a capacity of melting from 1,000 to 2,000 pounds of iron an hour, a brass furnace handling crucibles of 90 pounds capacity each, a core oven, ladles, flasks, riddles, bellows and the

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necessary small tools for carrying on foundry work. The cupola obtains its blast from a centrifugal fan.

The Forge Shop contains sixteen forges, one punching and shearing machine and a brazing outfit. Each forge is equipped with an anvil and forging tools, a blast and an exhaust fan, underground connections being made for each forge.

The Machine Shop contains machinists' benches with vice, one twenty-four inch by twenty-four inch by six foot planer, one twenty-five inch back-geared power feed drill press, one universal milling machine, one fourteen inch by six foot engine lathe, one sixteen inch by six foot engine lathe, one sixteen inch shaper, one twelve inch power hack saw, one seventeen inch power hack saw, one fourteen inch sensitive drill, one tool and cutter grinder, one emery grinder with fourteen inch wheels, one water emery grinder with twenty-four inch wheel, one portable electric drill, one portable electric tool post grinder, and necessary small tools for carrying on modern machine shop practice.

Mechanical Drawing and Machine Design. The drawing room contains drawing tables with lockers and cases for the filing of drawings. For illustrating the instruction in this department a projection cage, illustrating third angle projection, models, working drawings and blue prints for engineers and manufacturers, lithographs and engravings, photographs, trade catalogues and tables of data are used. The equipment of the shops and laboratories is also used for purposes of illustration in this department. There is an outfit for the making of blue prints.

Steam and Gas Engineering Laboratory. This laboratory contains a 35 horsepower Ball Automatic cutoff steam engine, an 8x12 plain slide valve engine, a 9x12 plain slide valve engine, a Wheeler surface condenser capable of condensing 3,000 pounds of steam per hour, a Babcock and Wilcox 50 horsepower water tube boiler, a 25 K. W. Kerr-Diehl turbo-generator set, a Rider-Ericsson hot air engine,

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a 5 horsepower Otto gasoline engine, a Pulsometer steam pump, a Schutte and Koerting universal injector, a Thurston oil testing machine, a machine for testing indicator springs, a steam pump, an air compressor, a hydraulic ram, four automatic injectors, an econometer, a Crosby steam gauge tester and necessary apparatus for experimental purposes, such as tanks, scales, dynamometers, gauges and manometers, thermometers, calorimeters, steam and gas engine indicators, revolution counters, reducing motions, planimeters, barometers, etc. Contiguous to the Mechanical building is the boiler house of the University, which furnishes heat for all the University buildings and power for the shops and laboratories. It contains four 50 horsepower boilers with auxiliaries. This plant furnishes additional facilities for experimental work.

Gas Analysis, Fuel and Oil Testing Laboratory. This laboratory contains a Carpenter's coal calorimeter, a Junker gas and gasoline calorimeter, flash and chill test apparatus, a Carpenter Viscosimeter, and one Orsat-Munencke gas analysis apparatus.

Dynamo Laboratory. For the study of dynamo-electric machines a suitable laboratory has been equipped. It contains a 25 K. W. direct current Kerr-Diehl turbogenerator set, a 20 K. W. Western Electric D. C. generator, belted to a 35 H. P. high speed steam engine. These generators are the main source of power for the laboratory and are provided with a switchboard carrying the necessary voltmeters, ammeters, switches, fuses and rheostat.

The laboratory is also connected to the city lighting plant from which single phase alternating current at 110 and 220 volts is available. There are also a Western Electric 7½ horsepower shunt wound motor, a Western Electric 7½ horsepower series wound motor, a Sturtevant 6 K. W. direct current compound wound generator, a Ft. Wayne 6 K. W. direct current compound wound generator, a 5 K. W. Lincoln dynamometer, transforming from 10 to 220 volts, a 10 horsepower 115 volt interpole Westinghouse shunt

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motor, a 6 K. W. Westinghouse rotary converter, transforming from 110 volts alternating current to 125 volts direct current and being suitable for use as an alternating current generator of single, two or three phases, as direct current two or three wire generator, as a double current generator, as a synchronous motor, as a direct current motor, and as an inverted rotary converter; a 20 K. W. 1,100 volt Thompson-Houston single phase alternator, a Century single phase 7½ horsepower motor, a 1,250 volt Wood direct current series arc light generator, one 5 K. W. General Electric transformer, two 1.5 K. W. Ft. Wayne transformers, one 1.5 K. W. Thompson-Houston transformer, two K. W. Westinghouse transformers, eight arc lights, a Cooper-Hewitt mercury vapor arc lamp, a 1½ ton portable crane, four watt meters, three small dynamos, water rheostats, starting boxes, lamp banks and resistance banks, and the necessary voltmeters, ammeters and accessories for testing electrical machinery.

Serving the laboratory there is a special plugging switch board, to which are connected forty-eight circuits, by means of which any desired combination of generators, motors, lamp-banks, water-rheostats, etc., may be made to facilitate the making of a large number of experiments. The running of different generators and motors together is further facilitated by an overhead track, on which runs a trolley carrying a one ton chain hoisting block.

The shops are run by a 25 horsepower motor through a line shaft divided into three parts by friction clutches. Any machine in the dynamo laboratory may also be driven from the line shaft. The motor is controlled by a combination starting box and field rheostat, so designed that a wide range of speed may be obtained. In addition to the advantages of variable speed control, this arrangement furnishes an example of modern electric drive for all kinds of machinery.

Other Laboratories. Students in these courses also do experimental work in the Cement Laboratory and in the Testing Laboratory. The laboratories of the Department of

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Physics are well equipped for advanced work in electrical measurements.

OUTLINE OF THE MECHANICAL ENGINEERING COURSE

The following tabular view covers the required 126 credit hours for graduation. Electives for one to three credit hours per semester may be added by students of approved scholarship standing:

FRESHMAN YEAR

First Semester		Second Semester	
Mathematics I	5	Mathematics II	5
English I	3	English II	3
Chemistry I	4	Chemistry II	4
Mechanical Drawing, M. E. I	2	Mechanical Drawing, M. E. II	2
Shopwork, M. E. III	2	Shopwork, M. E. IV	2
Military Drill	½	Military Drill	½
	16½		16½

SOPHOMORE YEAR

Mathematics III	4	Mathematics IV	4
Physics I	5	Physics II	5
Surveying, C. E. I	2	Surveying, C. E. II	2
Descriptive Geometry, M. E. V	3	Kinematics, M. E. VI	3
Shopwork, M. E. VII	2	Shopwork, M. E. VIII	2
Military Drill	½	Military Drill	½
	16½		16½

JUNIOR YEAR

Mechanics (Analytical), Math. V	5	Mechanics (Applied), Math. VI	5
Mechanical Laboratory, M. E. XI	2	Steam and Gas Laboratory, M. E. XII	2
Machine Design, M. E. XIII	4	Machine Design, M. E. XIV	1
Thermodynamics, M. E. XVII	3	Thermodynamics, M. E. XVIII	3
Valve Gears, M. E. XV	1	Materials of Construction, C. E. X	2
Military Drill	½	Electrotechnics, E. E. IV	3
		Military Drill	½
	15½		16½

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SENIOR YEAR

Steam and Gas Laboratory, M. E. XXI	2	Steam and Gas Laboratory, M. E. XXII	2
Steam and Gas Calculations, M. E. XXIII	2	Power Plant Design, E. E. X	3
Direct Current Laboratory, E. E. VII	2	Alternating Current Laboratory, E. E. VIII	2
Mechanical Engineering Seminary, M. E. XXV	2	Hydraulics, C. E. VIII	3
Electives	6	Electives	3
Military Drill	½	Military Drill	½
	14½		13½

OUTLINE OF THE ELECTRICAL ENGINEERING COURSE

The following tabular view covers the required 126 credit hours for graduation. Electives for one to three credit hours per semester may be added by students of approved scholarship standing:

FRESHMAN AND SOPHOMORE YEARS

These two years are the same as those of the Mechanical Engineering Course.

JUNIOR YEAR

First Semester		Second Semester	
Mechanics (Analytical), Math. V	5	Mechanics (Applied) Math. VI	5
Machine Design, M. E. XIIIa	3	Steam and Gas Laboratory, M. E. XII	2
Thermodynamics, M. E. XVIIa	4	Materials of Construction, C. E. X	2
Electrical Measurements, Phys. V	4	Advanced Electrical Measurements, Phys. VI	3
Military Drill	½	Electrical Laboratory, E. E. VI	1
		Direct Current Machinery, E. E. II	2
		Military Drill	½
	16½		15½

SENIOR YEAR

Alternating Current Machinery, E. E. III	2	Power Plant Design, E. E. X	3
Direct Current Laboratory, E. E. VII	2	Alternating Current Laboratory, E. E. VIII	2
Steam and Gas Laboratory, M. E. XXI	2	Hydraulics, C. E. VIII	3
Electrical Engineering Seminary, E. E. XI	2	Electives	5
Electives	6	Military Drill	½
Military Drill	½		
	14½		13½

DEPARTMENTS OF INSTRUCTION

General Studies. Thorough grounding is necessary in the general studies, mathematics, English, chemistry and

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physics, coming at the beginning of the course, as they form a necessary preparation for the subsequent professional studies. Students of more than average ability may elect a limited number of hours not included in the prescribed 126 hours of Engineering courses. Such additional hours may be in any College.

Mechanical Drawing. This subject is given great importance, for although the student may not go into a draughting office on graduation, a working knowledge of mechanical drawing is an essential part of an engineer's education. Mechanical drawing is the language of engineering, and the aim is to train the student how to use it in an effective manner. Lettering is emphasized, as the ability to do good lettering is comparatively rare. While he is acquiring the fundamentals, stress is laid on precision of execution. These fundamental studies lead to the courses in machine design.

Machine Design. This subject is begun with a study of mechanism, in which the relative motion of machine parts is considered, regardless of shape, strength or material. The student then takes up design from the standpoint of actual operation requirements, first considering that part of design depending on established common practice and an exercise of judgment, and then applying the principles of mechanics to calculating the proportions of machine parts Throughout all the work the making of shop drawings and modern draughting room methods are taught.

Shop Work. It is the purpose of the courses in shop work to impart a working knowledge of the fundamental principles underlying the construction of machinery. It is not the purpose of these courses to teach a trade. They supplement the courses in machine design and the work is closely related to that in the draughting and lecture room. The various shop departments are likewise closely co-ordinated: patterns made in the wood shop are used in the foundry, and the products of the foundry are in turn used in the machine shop.

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Steam and Gas Engineering. The foundation for this work is laid during the Freshman and Sophomore years in the study of Chemistry, Physics and Mathematics. During the junior year the details of construction of steam engines and turbines, boilers, gas and other heat engines are studied and a thorough study is made of the principles of thermodynamics, with their applications to the various kinds of heat engines, such as the steam and gas engine, air compressor, and refrigerating machine. Throughout all the work the necessary conditions for economical operation are fully considered. Supplementary to this class room study are the experimental investigations in the laboratory, beginning in the Junior year where the students make tests of engines and boilers under varying conditions of operation. Other experiments are performed, such as calibrating instruments used in tests, testing injectors and pumps, setting valves, testing flue gas, determining the quality of steam, testing of lubricating oils and coals. The student here gets a training in the methods of attacking problems and in accuracy of thought and manipulation.

In connection with the study of the production of power the transmission and methods of utilization of power are also considered.

During the Senior Year, in the course called Steam and Gas Calculations, the student works out a number of problems met in determining sizes and the more important details of steam engines, gas engines, gas producers, boilers, etc. Other subjects that may be selected during the Senior Year are Steam Turbines, Gas and Gasoline Engines, Heating, Ventilation, Refrigeration, and Compressed Air and its Applications.

Electrical Engineering. The basis of this work consists of the Physics and Mathematics of the Freshman and Sophomores years. During the Junior year, Primary Batteries, Electrical Measurements and the principles of Electrical Engineering are studied. All these subjects require laboratory work. The methods of measuring electrical quantities are first learned by actual practice, and then the

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student enters the dynamo laboratory for an experimental study of commercial apparatus. The characteristics and efficiencies of dynamos and motors are studied by experi mental work done on the machines by the student himself. During the Senior year a further, more detailed study is made of Direct and Alternating Current Machinery, including both class-room and laboratory work throughout the year. There is also given during the Senior year a course in Central Stations, in which the design and operating features of the power plant are studied. With this course there is also given a course in Electric Lighting and the Transmission of Power. In another course, the student learns to design electrical machinery, making complete drawings and specifications. The subject of Hydraulics furnishes a foundation for the hydro-electric features of the work in Central Stations and the Transmission of Power.

Other subjects that may be chosen during the Senior year are Telephony, Electric Railways and advanced Electrical Testing.

Seminary. During the Senior year students in Mechanical and Electrical Engineering meet together and discuss articles in the technical journals and in the Proceedings of the National Engineering Societies. Opportunity is given for the study of questions not taken up in the regular subjects of the courses.

Thesis. A thesis subject may be elected as part of the work of the Senior year. The object of a thesis is to put the student as far as possible on his own responsibility, thus developing his initiative and originality. The thesis problem may involve experimental work, design, testing, or library investigation.

Surveying. One year of surveying is required of students in these courses. Its purpose is to give such instruction in the use of instruments as the graduate may be called upon to apply in the practice of Mechanical or Electrical Engineering.

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Mechanics. The first part of this work is theoretical and consists of a study of both statics and dynamics, after which mechanics as applied in engineering is considered. A course in the materials of construction, including laboratory work, is also taken during the Senior year.

Hydraulics. The mechanical and electrical engineer needs to have a knowledge of the principles of hydraulics and for this reason the subject is required of students in these courses.

Physics. In addition to Physics I, II, V and VI, Electrical Engineering I and II and the theoretical work of Electrical Engineering V and VI are given in the Department of Physics.

Inspection Visits. Visits of inspection are made to various engineering works in the city. The Seniors are taken to Denver, where power plants and other engineering works are visited.

DESCRIPTION OF COURSES

MECHANICAL ENGINEERING

I. *Mechanical Drawing.* Elements of drawing, use and care of instruments, geometrical construction, freehand lettering, isometric and cabinet projection, orthographic projection, with especial reference to the third angle, conventions and the requirement of accurate work. Pre-requisites, entrance requirements in mathematics nor Engineering Courses required of all Engineering Freshmen.

First semester; M., 2-4 o'clock; T., 1-5 o'clock; two credit hours.

II. *Mechanical Drawing.* Elements of drawing, freehand and mechanical lettering, sketching of machine parts, third-angle projection, working drawings, isometric and cabinet projections, tracing, blue-printing. Pre-requisite, M. E. I. Required of all Engineering Freshmen.

Second semester; M., 2-4 o'clock; T., 1-5 o'clock; two credit hours.

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III. *Shopwork.* (a) Bench work in wood. Care and use of wood-working tools, exercises in joinery leading to pattern making. (b) Lathe work in wood. Turning between centers, face-plate and chuck turning. (c) Pattern making. Construction of patterns for use in the foundry, introducing draft, shrinkage, finish and appliances for practical application of patterns to actual foundry work. Required of Mechanical and Electrical Engineering Freshmen. Fee, $2.00.

First semester; W. F., 2-5 o'clock; two credit hours.

IV. *Shopwork.* (a) Foundry work. Molding in iron and brass, management of cupola, care and handling of molten metal, use and making of cores. (b) Forge work. Working of iron and steel, including bending, twisting, shaping, welding, hardening, tempering, annealing, tool making, brazing. Required of Mechanical and Electrical Engineering Freshmen. Fee, $2.00.

Second semester; W. F., 2-5 o'clock; two credit hours.

V. *Descriptive Geometry.* Orthographic projection applied to the solution of problems relating to points, lines, planes, single and double curved surfaces, tangent planes and lines, intersections and development of surfaces. The generation and classification of surfaces; revolutions; draughting for sheet metal work. Pre-requisites, Math. I and II, M. E. I and II. Required of Mechanical, Electrical and Civil Engineering Sophomores.

First semester; lectures and recitations. M. F., 10 o'clock; drafting, T., 1-4 o'clock; three credit hours.

VI. *Kinematics.* Principles underlying mechanism, the relative motion of machine parts; instantaneous centers; belting; chains; toothed gears; cams; link motions; trains of mechanism. In the drafting room the students design cams, straight line motions, spur, annular and bevel gears, in both cyclodial and involute systems, applying the principles learned in the lecture rooms. A series of kinematic models is being constructed by the students for use in this course. Pre-requisites, M. E. V. Required of Mechanical and Electrical Engineering Sophomores.

Second semester; lectures and recitations, M. W. F., 10 o'clock; drafting, T., 1-4 o'clock; three credit hours.

VII. *Shopwork.* (a) Bench work in metals. Use of chisel, file and scraper. (b) Machine shop. Lathe work in metals; turning, boring and thread cutting. Required of Mechanical and Electrical Engineering Sophomores. Fee, $2.00.

First semester; W. F., 2-5 o'clock; two credit hours.

VIII. *Shopwork.* Machine shop. Work on shaper, planer and milling machine. Surfacing, slotting and gear cutting. Tool making. Pre-requisites, M. E. VI and VII. Required of Mechanical and Electrical Engineering Sophomores. Fee, $2.00.

Second semester; W. F., 2-5 o'clock; two or three credit hours.

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IX. *Shopwork.* General work on all types of machines, including the construction of apparatus for the steam and electrical laboratories, the building of machinery, pipe fitting and the installation of steam and gas engines and laboratory equipment in general. Pre-requisite, M. E. VIII. Elective for Mechanical and Electrical Engineers.

First semester; hours to be arranged; one or two credit hours.

X. *Shopwork.* Continuation of M. E. IX. Elective for Mechanical and Electrical Engineers.

Second semester; hours to be arranged; one or two credit hours.

XI. *Mechanical Laboratory.* Experimental determination of the efficiency of screw jacks, hoisting machines, automobile transmission, gearing and other power transmission machinery, friction of bearings, measurement of power required for operation of machine tools, etc. Pre-requisites, M. E. VI, Physics II. Required of Mechanical Engineering Juniors. Fee, $2.00.

First semester; T., 1-5 o'clock; two credit hours.

XII. *Steam and Gas Laboratory.* Calibration of gauges, thermometers and indicator springs, calorimetry, setting of valves, indicator practice, measurement of power by means of the brake and dynamo-meter, determining the efficiency of the steam boiler, steam engine, gas and gasoline engine, testing of lubricating oils, fuel oils and coals. Pre-requisite, M. E. XVII. Required of Mechanical and Electrical Engineering Juniors. Fee, $2.00.

Second semester; T., 1-5 o'clock; two credit hours.

XIII. *Machine Design.* Methods of making shop drawings of machines and machine parts, assembled and detailed drawings, application of empirical methods and the principles of mechanics and kinematics to the design of machines and machine parts, such as bolts, nuts, keys, cotters, springs, journals, bearings, shafts, pulleys, gear wheels, couplings and clutches. The work consists of lectures and practice in the draughting room. Pre-requisites, M. E. III, IV, VI, VII and VIII. Required of Mechanical Engineering Juniors.

First semester; lectures and recitations, W. F., 10 o'clock; drafting M., 2-4 o'clock; Th., 1-5 o'clock; four credit hours.

XIIIa. *Machine Design.* Short course for Electrical Engineering Juniors. Pre-requisites, same as for M. E. XIII.

First semester; lectures and recitations, W. F., 10 o'clock; drafting, Th., 1-4 o'clock; three credit hours.

XIV. *Machine Design.* Continuation of M. E. XIII. Pre-requisite, M. E. XIII. Required of Mechanical Engineering Juniors.

Second semester; hours to be arranged; one credit hour.

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XV. *Valve Gears.* A course treating of the simple slide valve, automatic valves, and reversing valves, including the Stephenson and Walschaert. Methods of designing and laying out valves by the use of the Bilgram or Zeuner diagrams. Pre-requisite, M. E. VI. Required of Mechanical Engineering Juniors.

First semester; hours to be arranged; one credit hour.

XVII. *Thermodynamics.* Principles of the mechanical theory of heat as applied to heat engines, such as the hot air engine, steam engine, gas engine, steam turbine, air compressor, refrigerating machines, and the principles to be applied in order to secure the greatest economy of operation. Pre-requisites, Math. III and IV, Physics I and II. Required of Mechanical Engineering Juniors.

First semester; lectures and recitations, M. W. F., 11 o'clock; three credit hours.

XVIIa. *Thermodynamics.* Short course for Electrical Engineering Juniors. Pre-requisites, same as for M. E. XVII.

First semester; lectures and recitations, M. W. F., 11 o'clock; four credit hours.

XVIII. *Thermodynamics.* Continuation of Course XVII. Pre-requisite, M. E., XVII. Required of Mechanical Engineering Juniors.

Second semester; lectures and recitations, M. W. F., 11 o'clock; three credit hours.

XXI. *Steam and Gas Laboratory.* Continuation of M. E. XII. Pre-requisite, M. E. XII. Required of Mechanical and Electrical Engineering Seniors. Fee, $2.00.

First semester; T., 1-5 o'clock; two credit hours.

XXII. *Steam and Gas Laboratory.* Continuation of M. E. XXI. Pre-requisite, M. E. XXI. Required of Mechanical Engineering Seniors. Fee, $2.00.

Second semester; T., 1-5 o'clock; two credit hours.

XXIII. *Steam and Gas Calculations.* The calculation of problems met in the design of power plant equipment, such as steam engines, steam turbines, gas engines, air compressors, boilers, gas producers and auxiliary apparatus. Pre-requisite, M. E. XVIII Required of Mechanical Engineering Seniors.

First semester; drafting room, hours to be arranged; two credit hours.

XXV. *Mechanical Engineering Seminary.* The study and discussion of papers found in the technical journals and in the Proceedings of the National Engineering Societies. May include the preparation of original papers by the student on subjects of particular interest to him. The course affords opportunity for the study of concise expression as found in good technical literature and should help the student in his own use of the English language. Required of

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Mechanical Engineering Seniors. This seminary meets with a similar seminary required of Electrical Engineering Seniors. Thus, each group of students has the opportunity of imparting valuable information to the other, leading to a broader outlook for both in these closely allied fields.

First semester; hours to be arranged; two credit hours.

XXVII. *Steam Turbines.* The theory and design of the principal types of steam turbines. Pre-requisites, M. E. XVIII or XVIIa. Elective for Mechanical Engineering Seniors.

First semester; lectures and drafting room work; hours to be arranged; three credit hours.

XXVIII. *Heating, Ventilating, and Refrigeration.* The theory and design of modern heating and ventilating systems and the principles and methods of producing low temperatures. Pre-requisites, M. E. XVIII or XVIIa. Elective for Mechanical Engineering Seniors.

Second semester; lectures and drafting room work; hours to be arranged; three credit hours.

XXIX. *Gas and Gasoline Engines.* The theory and design of gas and gasoline engines and gas producers. Pre-requisites, M. E. XVIII or XVIIa. Elective for Mechanical Engineering Seniors.

First semester; lectures and drafting room work; hours to be arranged; three credit hours.

XXX. *Compressed Air and Its Applications.* A study of the theory and principles of apparatus for producing and utilizing compressed air. The application of compressed air in the industries. Pre-requisites, M. E. XVIII or M. E. XVIIa. Elective for Mechanical Engineering Seniors.

Second semester; hours to be arranged; two credit hours.

Thesis. Elective for Mechanical Engineering Seniors. Throughout the Senior year. Number of credit hours to be determined in conference with instructor under whom taken. May involve: experimental work; the design of a complete plant or a complete machine, the test of a complete plant or machine or of a combination of machines; a library investigation.

DESCRIPTION OF COURSES

ELECTRICAL ENGINEERING

II. *Direct Current Machinery.* This is a practical course, including the theory and operation of generators and motors of the direct current type. Pre-requisites, Math. III and IV, Physics I and II. Required of Electrical Engineering Juniors.

Second semester; T. Th., 11 o'clock; two credit hours.

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III. *Alternating Current Machinery.* This is a practical course, including the theory and operation of alternating current machinery. Pre-requisite, E. E. II. Required of Electrical Engineering Seniors.

Second semester; T. Th., 11 o'clock; two credit hours.

IV. *Electrotechnics.* A short course for Mechanical Engineering Juniors. Deals with the laws of electric and magnetic circuits, the construction and operation of electromagnetic apparatus, and with the distribution and applications of electrical energy. Pre-requisites, Math. III and IV, Physics I and II.

Second semester; lectures and recitations, M. W. F., 10 o'clock; three credit hours.

VI. *Electrical Laboratory.* The elementary experiments in direct and alternating currents usually given in the electrical laboratory. These experiments are preliminary to laboratory courses E. E. VII and VIII, and lead up to the more advanced experiments there given. The work includes measurement of resistance, study of windings and connections of dynamos and motors, study of electrical measuring instruments, magnetization and permeability tests, inductance and capacity measurements and tests of watt-hour meters. Pre-requisite, E. E. II. This course is pursued in connection with E. E. II. Laboratory. Required of Electrical Engineering Juniors. Fee, $2.00.

Second semester; Th., 1-5 o'clock; two credit hours.

VII. *Direct Current Laboratory.* A study of direct current machinery in the laboratory, including the operation of dynamos and motors, magnetization curves, characteristic curves, speed curves, brake and efficiency tests, operating dynamos in parallel, operation of series arc generator and of the three-wire generator. The work is practical in its nature, the object being to make the student familiar with the characteristics and operation of the electrical equipment of the power plant. Pre-requisites, E. E. II or IV.

Required of Mechanical and Electrical Engineering Seniors. Fee $2.00.

First semester; Th., 1-5 o'clock; two credit hours.

VIII. *Alternating Current Laboratory.* A study of alternating current phenomena and machinery in the laboratory, including transmission lines, the measurements of alternating current power, the testing of alternating current watt-hour meters, transformer characteristics, transformer testing, the characteristics of alternators, the testing of alternators, the parallel operation of alternators, wave form, single, two and three phase systems, synchronous motors, synchronous converters, induction motors and mercury arc rectifiers. Pre-requisites, E. E. III or IV and E. E. VII. Required of Mechanical and Electrical Engineering Seniors. Fee, $2.00.

Second semester; W., 1-5 o'clock; two credit hours.

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X. *Power Plant Design.* A study of the design and operation of central stations. Arrangement of prime movers, generators, switchboards, circuits, etc. Choice of location of plant and of types of generating machinery and accessories. Methods of power distribution and of reliability of operation. Pre-requisites, M. E. XVIII or XVIIa and E. E. III or IV. Required of Mechanical and Electrical Engineering Seniors.

Second semester; lectures and recitation, M. W., 9 o'clock; drafting, F., 8-11 o'clock; three credit hours.

XI. *Electrical Engineering Seminary.* The study and discussion of papers found in the technical journals and in the Proceedings of the National Engineering Societies. May include the preparation of original papers by the student on subjects of particular interest to him. The course affords opportunity for the study of concise expression as found in good technical literature and should help the student in his own use of the English language. Required of Electrical Engineering Seniors. This seminary meets with a similar seminary required of Mechanical Engineering Seniors. Thus, each group of students has the opportunity of imparting valuable information to the other, leading to a broader outlook for both in these closely allied fields.

First semester; hours to be arranged; two credit hours.

XIII. *Dynamo Design.* Complete design of a direct current dynamo. Each student works out a complete design and makes drawings and specifications to cover it. Pre-requisite, E. E. II. Elective for Electrical Engineering Seniors.

First semester; hours to be arranged; three credit hours.

XIV. *Electric Lighting and Power Transmission.* Theory and practice in the construction and operation of lines. Study of appliances for the transmission and distribution of electrical energy for lighting, power, and other industrial uses. Pre-requisite, E. E. VIII. Elective for Electrical Engineering Seniors.

Second semester; hours to be arranged; three credit hours.

XV. *Telephony.* The principles and operation of telephone systems. Elective for Electrical Engineering Seniors.

First semester; hours to be arranged; three credit hours.

XVI. *Electric Railways.* Problems met in electric railway work, such as those concerning equipment and its operation and those dependent upon traffic conditions and territory served. Elective for Electrical Engineering Seniors.

Second semester; hours to be arranged; three credit hours.

XVIII. *Electrical Laboratory.* Continuation of E. E. VIII. Pre-requisite, E. E. VIII. Elective for Electrical Engineering Seniors.

Second semester; hours to be arranged; two credit hours.

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Thesis. Elective for Electrical Engineering Seniors. Throughout the Senior year. Number of credit hours to be determined in conference with instructor under whom taken. May involve experimental work, a design, a test, or library work.

OTHER STUDIES

For descriptions of such studies as mathematics, English, chemistry and physics, see under the College of Liberal Arts. For descriptions of surveying, hydraulics and materials of construction see under the Civil Engineering Course.

Civil and Irrigation Engineering

GENERAL STATEMENT

The curriculum in the Division of Civil and Irrigation Engineering has for its purpose the laying of a foundation during the first two years upon which to build the purely technical work prescribed for the Junior and Senior years.

At first the candidate's hand is trained in the graphic portrayal of his ideas, his view of the physical sciences is enlarged, practice in field mensuration is afforded him and he is led to correlate his experimental and derivative results and to draw the proper conclusions therefrom. Above all, his mathematical concepts are extended and a thorough drill in this basic subject is made the pre-requisite for further advancement.

During the last two years technical engineering studies invite the application of previously obtained knowledge to the problems confronting the designer and builder of engineering structures.

ELECTIVES

Provision is made in the course for a limited amount of electives, which may be chosen from any of the various University departments. Subjects in irrigation and drainage are offered and will be found particularly useful to the engineer, since their application is all-important in the development of the semi-arid West. Other suggested and useful electives are additional courses in mathematics, chem-

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istry, physics, geology and bacteriology as applied to the sanitary investigation of water supplies. For the student contemplating foreign service, a modern language becomes a helpful adjunct to his educational equipment. Subjects falling within the sphere of personal inclination will naturally present themselves and, aside from their practical value, will tend to broaden the purview of the engineer. Students of more than average ability may somewhat exceed the 126 hours prescribed for graduation.

A GENERAL COURSE

To prevent excessive specialization, general subjects are required during the first two years of the course after which, however, in the Junior and Senior years the student possesses a limited range of choice to carry his preparation along lines of special inclination.

The provided electives which may be taken by Civil Engineers in the different departments and colleges of the University admit of qualification for such vocations as Architect, Agricultural Engineer, Chemical Engineer, City Engineer, County Surveyor, Forestry Engineer, Hydraulic Engineer, Irrigation Engineer, Municipal Engineer, Railway Engineer, Sanitary Engineer, Structural Engineer, U. S. Deputy Mineral Surveyor.

THESIS

The candidates for a degree may elect an acceptable thesis, based upon some approved subject necessitating research, experimentation or design.

DIVISION LIBRARY

The library of the Division of Civil Engineering contains over 1,000 volumes, with new additions constantly being made. A complete set of the Transactions of the American Society of Civil Engineers, an entire bound series of the U. S. Water-Supply Papers, as well as bound files of the leading engineering periodicals constitute an invaluable reference library covering the evolution and practice of modern engineering. The student will find an exposition

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of any phase of engineering in the books and maps of this library.

The leading engineering periodicals are regularly received by the Division and their careful perusal is urged upon the student.

EQUIPMENT

The Division possesses an excellent line of all engineering instruments, transits, levels, plane-tables, solar compass, railroad compass, surveying aneroid barometers, sextant, current meters, water registers, meridiograph, bubble-tester, models, slide rules, chains, tapes, rods and the necessary accessories for field and office work.

CIVIL ENGINEERING LARORATORY

One of the most valuable acquirements of the practicing engineer is to have an intimate knowledge of the capabilities and behavior of materials used in structural work. To this end a laboratory has been equipped where various materials may be subjected to tests and their properties thus determined.

The following appliances are in use: a 1,000-pound Olsen cement testing machine, a 2,000-pound Riehle shot machine, a 50,000-pound Riehle testing machine, together with extensometer, deflectometer, Berry strain gauge, Vicat needles, volumeters, molds, balances, etc., necessary for laboratory work.

The course in Testing Materials (C. E. XIV) is conducted in this laboratory, and is required of all engineering students. It may be elected by other qualified students.

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COURSE OF STUDY

The following tabular view covers the required 126 credit hours for graduation. Electives for one to three credit hours per semester may be added by students of approved scholarship standing:

FRESHMAN YEAR

First Semester		Second Semester	
Mathematics I (Adv. Alg. and Trig.)	5	Mathematics II (Analytic Geom.)	5
C. E. I (Surveying)	2	C. E. II (Surveying)	2
M. E. I (Drawing)	2	M. E. II (Drawing)	2
Chemistry I	4	Chemistry II	4
English I	3	English II	3
Military Drill	½	Military Drill	½
	16½		16½

SOPHOMORE YEAR

Mathematics III (Calc.)	4	Mathematics IV (Calc.)	4
C. E. III (Higher Surv.)	3	C. E. IV (Railroad Surv.)	3
M. E. V. (Desc. Geom.)	3	C. E. VI (Drawing)	3
C. E. VII (Roads)	2	C. E. VIII (Railroad Constr.)	2
Physics I	5	Physics II	5
Military Drill	½	Military Drill	½
	17½		17½

JUNIOR YEAR

Mathematics V (Theo. Mech.)	5	Mathematics VI (Applied Mech.)	5
C. E. XI (Graphostatics)	3	C. E. XII (Elements of Struc.)	2
C. E. XIII (Tunnels)	2	C. E. XIV (Testing Materials)	2
Geology I	2	C. E. XVI (Hydraulics)	3
Electives	3	Electives	3
Military Drill	½	Military Drill	½
	15½		15½

SENIOR YEAR

C. E. XXI (Framed Struc.)	5	C. E. XXII (Framed Struc.)	5
C. E. XXIII (Plain Masonry)	3	C. E. XXIV (Reinf. Concrete)	3
C. E. XXV (Water Supply)	3	C. E. XXVI (Sewerage)	3
Electives	2	Electives	2
Military Drill	½	Military Drill	½
	13½		13½

The requirements for an engineer naturally fall into a few general heads embracing the essentials of his technical equipment, viz:

(1) Mathematics, (2) Drawing, or Graphics, (3) Surveying, (4) the pertinent Physical Sciences and (5) purely

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technical subjects, for whose development and application the previous studies are wholly preparatory.

To illustrate the organic unity of the foregoing course the subject matter may be arranged as follows:

General Topics	First Year	Second Year	Third Year	Fourth Year
Mathematics	Alg., Trig. and Analytics	Calculus	Theo. and Applied Mech.	
Drawing	Elementary Drawing	Advanced Drawing		
Surveying	Elementary Surveying	Advanced Surveying		
Physical Sciences	Chemistry	Physics	Geology	
Technical Courses		Roads Railroads	Graphostatics Tunnels Elements of Structures Testing Materials Hydraulics	Str'l Design in Timber Steel and Masonry Water Supply and Sewerage

DESCRIPTION OF COURSES

CIVIL ENGINEERING

I. *Elementary Surveying.* The object of this course is to gain the necessary familiarity with the parts, adjustments and use of the principal surveying instruments, such as compass, level, transit, planetable, etc., and to cover the essentials of plane surveying. Field practice and actual problems, together with the keeping of proper notes and the making of neat plats, are considered prime requisites. Mathematics I is a pre-requisite but may be taken in connection with this course.

First semester; recitations, T. Th., 8 and 9 o'clock; field hours to be arranged; two credit hours.

II. *Elementary Surveying.* Customary methods generally considered best in city, mining and elementary topographic surveying

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are carefully developed and later supplemented with sufficient field and office exercises. Pre-requisites, Math. I and C. E. I.

Second semester; recitations, T. Th., 8 and 9 o'clock; field hours to be arranged; two credit hours.

III. *Higher Surveying.* Advanced practice. Such subjects as geodetic surveying, topographic details, hydrographic surveying and stream gauging, and map projection and plotting from the leading topics touched upon. Pre-requisites, Math. I and II and C. E. I.

First semester; recitations, M. W. F., 8 and 9 o'clock; field hours to be arranged; three credit hours.

IV. *Railroad Surveying.* Lectures, field and office exercises are devoted to railroad reconnoissance, preliminary and location surveys, simple curves, compound curves, turnouts, spiral easement curves, measurement and staking of earthwork, and the properties and use of the mass diagram. Pre-requisites, Math. I and II and C. E. I.

Second semester; recitations, M. W. F., 8 and 9 o'clock; field hours to be arranged; three credit hours.

V. *Drawing.* A study is made of simple classical mouldings and the common conventions of architectural drafting. Complete drawings for two or more simple buildings will be required. Pre-requisites, M. E. I and II.

First semester; hours for lectures and drafting periods to be arranged; two credit hours.

VI. *Drawing.* Exercises in shades, shadows and perspective; the projection and rendering of topographic maps; and the delineation of various kinds of civil structures. Pre-requisite, Descriptive Geometry.

Second semester; recitation, T. Th., 10 o'clock; drafting, T., 1-4 o'clock; three credit hours.

VII. *Roads.* Road economics and location; gravel, broken stone and miscellaneous roads; street pavements, drainage, curbs and gutters, pavement foundations, asphalt, brick, cobble-stone and stone-block pavements; sidewalks.

First semester; T. Th., 10 o'clock; two credit hours.

VIII. *Railroad Construction.* Lectures and field work. The main subheads considered are: Roadbeds, track laying, minor structures, design of freight and station yards, safety operating devices, economic location and operation, cost data, field location, plats, profiles, estimates, etc. Pre-requisites, C. E. I and II.

Second semester; T. Th., 10 o'clock; two credit hours.

XI. *Graphostatics.* A thorough development of the graphic method to the solution of static problems of all kinds is made fundamental to the subsequent application thereof to stresses in roof

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and bridge trusses, plate girders, arches, towers, and miscellaneous structures considered as supporting stationary and moving loads.

First semester; M. W. F., 8 o'clock; laboratory hours to be arranged; three credit hours.

XII. *Elements of Structures.* Lectures and drafting periods covering the theory and design of beams, columns, plate girders, roof trusses and simple highway bridges. Additional attention will be given to shop drawings, bills of material and estimates of cost. Pre-requisite, C. E. XI.

Second semester; hours to be arranged; two credit hours.

XIII. *Tunnels.* Methods of surveying, tunnel machinery, timbering and lining, tunnels through hard rock and soft ground, submarine tunneling, ventilation and lighting, cost of construction.

First semester; T. Th., 11 o'clock; two credit hours.

XIV. *Testing Materials.* This is a laboratory course with sufficient lectures and recitations to outline and elucidate the results derived. Two separate series of laboratory investigations are carried on by the student. The first pertains to cements, limes, etc., and embraces the determination of their actions subject to artificially imposed conditions. Complete records are made and the results co-ordinated in finished reports. The second relates to the structural properties of various materials and the experimental derivation of their capacities for compression, tension, flexure, torsion, etc. Pre-requisite, Mathematics V. Fee, $2.50.

Second semester; laboratory period lecture hours to be arranged; W. 2-6 o'clock; two credit hours.

XIVa. *Plain Concrete.* The practical proportioning and mixing of concrete; its use in the simpler structures about the home and on the farm, viz: light foundations, walls, floors, sidewalks, culverts, small irrigation devices, watering troughs, etc. The course is to consist largely of exercises, and is offered for the non-technical student. Fee, $2.50. Elective.

Second semester; W., 2-6 o'clock; two credit hours.

XVI. *Hydraulics.* In the treatment of hydraulics the following subjects are extensively discussed: The laws of hydrostatics and of fluid friction; the units of measurement; the flow of water through orifices, tubes, pipes, over weirs, and in canals and rivers; the measurement of water-power; the dynamic pressure of flowing water; the theory of hydraulic motors, including vertical water wheels, impact, reaction and tangential turbines, and centrifugal pumps. The solution of problems is accentuated. Pre-requisite, Mathematics V.

Second semester; M. W. F., 11 o'clock; three credit hours.

XXI. *Simple Framed Structures.* Lecture and designing periods. The determination of stresses in the principal forms of bridge

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trusses under steady and live loads, snow and winds; the design of various types of girder and truss bridges. Pre-requisites, C. E. XI and Mathematics V and VI.

First semester; M. T. W. Th. F., 9 o'clock; five credit hours.

XXII. *Higher Framed Structures.* Lectures and designing periods. Stresses in the theory and design of the advanced types of structural forms, continuous, draw, cantilever and suspension bridges, arches, and modern mill and office buildings. Pre-requisite, C. E. XXI.

Second semester; M. T. W. Th. F., 9 o'clock; five credit hours.

XXIII. *Plain Masonry.* Lectures and designing periods. The following sub-heads cover the main topics treated: (1) The description and characteristics of the materials, such as lime, cement, sand, gravel, stone, mortar, concrete; (2) methods of preparation and use; (3) foundations; (4) masonry design and construction.

First semester; M. W. F., 10 o'clock; three credit hours.

XXIV. *Reinforced Concrete.* Lectures and designing periods. Uses, advantages, and properties of reinforced concrete, general theory, working stresses, and constructive details, formulas and their application to the design of arches, retaining walls, dams and miscellaneous structures. Pre-requisite, C. E. XXIII.

Second semester; M. W. F., 10 o'clock; three credit hours.

XXV. *Water Supply.* Quantity, sources and quality of water supplies; construction and operation of works for the collection, purification and distribution of water, etc. Pre-requisite, C. E. XVI.

First semester; M. W. F., 11 o'clock; three credit hours.

XXVI. *Sewerage.* The designing, construction and maintenance of sewer systems. Pre-requisite, C. E. XVI.

Second semester; M. W. F., 11 o'clock; three credit hours.

ELECTIVE COURSES

XXXI. *History of Engineering.* Lectures and assignments. The course aims to cover the origin, development and present status of engineering, portrayed in a purely descriptive manner, and including such subjects as surveying, its necessity in centers of fixed population; city planning and expansion; the extension of highways to meet the needs of commerce; bridges; water works and sewers; railroads; ship canals; irrigation and drainage projects; modern buildings; high masonry dams; the comparison of methods and appliances used in constructing the wonders of ancient and modern times; the leading inventions; and the newer methods in structural design. The object is to present engineering features in a popular, informational way. Elective for all students.

First semester; hours to be arranged; three credit hours.

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XXXII. *Thesis.* An election may be made of some approved subject involving experiment, research or design. Credit hours to be arranged for, depending upon the time required to complete the undertaking.

Second semester; hours and credits to be arranged.

XXXIII. *Least Squares.* The practical application of the theory of probabilities to the closely conforming yet slightly varying results of measured quantities, thus leading to the most probable values for use in experimental and actual practice, concisely defines this subject. Pre-requisites, Mathematics I, II, III and IV.

First semester; hours to be arranged; two credit hours.

IRRIGATION ENGINEERING

I. *Irrigation Laws and Customs.* Land laws of the arid region, appropriation, water rights, measurement and duty of water, irrigation laws in various arid and semi-arid states, particularly in Wyoming, and riparian and interstate rights.

First semester; hours to be arranged; two credit hours.

II. *Irrigation.* A course covering the elements of practical irrigation; precipitation and run-off; methods of water measurement; evaporation and absorption; underground flow; alkali; drainage and sedimentation; duty of water; the proper location of canals, headworks, diversion weirs, flumes, escapes, etc., storage reservoirs and dams; pumps, and practical method of irrigation. The course consists of two lecture hours and one designing and drafting period per week. Those students not in technical courses may choose the lecture hours only and receive two credit hours therefor. Pre-requisite, C. E. I.

Second semester; T. Th., 8 o'clock; two or three credit hours.

III. *Drainage.* Characteristics of soils, drainage practice, laying out drains, grades for tile drains and ditches, drainage systems, estimates of cost. Two lecture hours and one designing and drafting period per week. Choice of lectures only may be made. Pre-requisite, C. E. I.

First semester; T. Th., 8 o'clock; two or three credit hours.

IV. *Irrigation Structures.* Lecture and designing periods. This course is intended to cover the theory and practice of design with reference to various structures and pertinent to irrigation systems, such as dams, diversion weirs, headgates, canals, flumes, siphons, etc.

Second semester; hours to be arranged; two credit hours.

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Mining Engineering

GENERAL STATEMENT

The courses in Mining Engineering are designed to train students in the fundamental principles which have to do with mining in all its branches, and also to give as much specialized instruction as conditions may permit for undergraduate work of four years.

The first two years of the mining course are almost identical with the first two years of Mechanical, Electrical or Civil Engineering. This condition makes it possible for a student to follow engineering in a broad way, and at the end of two years he is in a position to decide for himself whether he desires to follow one engineering course in preference to some other.

The Junior and Senior years afford opportunity for specialization. It is to be noted that the student need not decide in which course he intends to be graduated until the beginning of the Junior year, when specialization is begun. Even then specialization is not narrow, for subjects in allied branches of engineering are studied.

The variety of demands made upon the mining and metallurgical engineer calls for technical training in a large number of subjects. In meeting these demands the Division gives instruction in the fundamental principles underlying geology, mineralogy, mining, and metallurgical engineering, and imparts by laboratory practice, field work and other means, a working knowledge of these subjects to those who may elect this branch of engineering.

Since a knowledge of other basal subjects such as chemistry, physics, civil, mechanical and electrical engineering are necessary in mining engineering it is recommended that both the theoretical and practical phases of these courses be mastered by each student.

ELECTIVES

As far as practicable the needs of each student are carefully ascertained and suitable provision is made by which

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he may elect a limited number of courses from other colleges of the University. In every instance it is suggested that the student consult the professor in charge of his major subject from whom advice may be obtained. A list of suggested electives follows the required course of study.

SCHEDULE OF SUBJECTS IN THE COURSE OF MINING ENGINEERING

The following tabular view covers the required 126 credit hours for graduation. Electives for one to three credit hours per semester may be added by students of approved scholarship standing:

FRESHMAN YEAR

First Semester		Second Semester	
Mathematics I	5	Mathematics II	5
English I	3	English II	3
Chemistry I	4	Chemistry II	4
M. E. I (Drawing)	2	M. E. II (Drawing)	2
M. E. III (Shop)	2	M. E. IV (Shop)	2
Military Drill	½	Military Drill	½
	16½		16½

SOPHOMORE YEAR

Mathematics III	4	Mathematics IV	4
Physics I	5	Physics II	5
Geology I	2	Geology II	2
Civil Engineering I	2	Civil Engineering II	2
Metallurgy I	2	Mineralogy II	1
Mining I	1	Mining II	1
Military Drill	½	Military Drill	½
	16½		15½

JUNIOR YEAR

Mathematics V	5	Mathematics VI	5
Chemistry III	3	Econ. Geology IV	2
Econ. Geology III	2	Mineralogy IV	2
Mineralogy III	2	Mining IV	1
Mining III	1	Mining XII	4
Elective	2	Elective	2
Military Drill	½	Military Drill	½
	15½		16½

SENIOR YEAR

Metallurgy III	3	Metallurgy IV	3
Econ. Geology V	2	Econ. Geology VI	2
Metallurgy V	2	Metallurgy VI	2
Mining V	2	Mining VI	3
Mining VII	2	Mining VIII	2
Memoirs	1	Thesis	2
Elective	2	Military Drill	½
Military Drill	½		
	14½		14½

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ELECTIVES

Electives for one to three hours per semester suggested for students of approved scohlarship standing:

Chemistry IV, V, XV, XVI; English IX, X; French I, II, III, IV; Geology (College Liberal Arts) III, IV, V, VI, (Economic) VII, IX, X; German, I, II, XI, XII; History VII, VIII, XV, XVI; Mechanical Engineering III, IV, VII, VIII; Electrical Engineering II, III, VI, VII; Physics V, VI; Political Economy I, V, VI, VII; Civil Engineering III, IV, XIVa; Physical Training XII.

SPECIAL MUSEUM AND FIELD COURSES

A special course having as major subjects Geology, Bot any, Zoology and advanced work in free-hand drawing in the first two years, and advanced Stratigraphical Geology, Comparative Anatomy and Paleontology in the last two years, with vertebrate restoration in the laboratory of the University Museum during the entire course, may be arranged by students who desire to prepare for field and museum work in paleontology.

SPECIAL STUDENTS

Students who desire to take up some special line of study may do so by permission of the President. This work will not lead to a degree. Those who are desirous of taking special courses in assaying may do so, provided they take courses in chemistry and mineralogy, together with the work in assaying.

SUMMER WORK

A valuable feature of present day instruction in mining engineering is summer work in practical mining. To that end, it is the purpose to take mining students, between their Junior and Senior years, for a period of two or three weeks to some well-developed mining district, where, under the guidance of an instructor, they will study the conditions found in that district and the means adapted to meet them. Upon this work will usually be based the thesis which each student is required to write before graduation.

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UNIVERSITY GEOLOGICAL SURVEY OF WYOMING

The mining Division aims to do such work for the mining interests of the state as the Experiment Station of the College of Agriculture is doing for agriculture. As rapidly as possible a geological survey of the state is being made, with special reference to the economic products which can be utilized in the near future.

The following thirteen bulletins have been issued:

*1. Notes on the Mineral Resources of Wyoming, by Wilbur C. Knight.
2. The Heating Value of Wyoming Coal and Oil, by Edwin E. Slosson and Luke C. Colburn.
3. The Artesian Basins of Wyoming, by Wilbur C. Knight.
4. The Cement Plaster of Laramie, by Edwin E. Slosson.
5. Sweetwater Mining District, by Wilbur C. Knight.
6. The Soda and Magnesia Deposits of Wyoming, by Wilbur C. Knight and Edwin E. Slosson.
*7. Coal Resources of Wyoming, by Loyal W. Trumbull.

PETROLEUM SERIES

*1. The Salt Creek Oil Field, by Wilbur C. Knight and Edwin E. Slosson.
2. The Petroleum of the Shoshone Anticlinal, by Wilbur C. Knight and Edwin E. Slosson.
3. The Petroleum of the Belle Fourche Oil Field, by Wilbur C. Knight and Edwin E. Slosson.
4. The Dutton, Rattlesnake, Arago and Oil Mountain Oil Fields, by Wilbur C. Knight and Edwin E. Slosson.
5. The Newcastle Oil Field, by Wilbur C. Knight and Edwin E. Slosson.

*Out of print.

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6. The Bonanza, Cottonwood and Douglas Oil Field, by Wilbur C. Knight and Edwin E. Slosson.

These bulletins, as far as they are still in print, will be sent free upon receipt of postage. (Two cents each).

STATE ASSAYING

The State Legislature of 1907 passed a bill fixing the assay charges at the University as follows: Gold, silver, copper and lead, 50 cents each; for gold, silver and copper, when all are made on the same sample at the same time, $1.00. No provision is made for treating other than Wyoming ores. Assay charges must be paid in advance.

In sending samples for assays, always state what you want the sample assayed for and mark the sample with your name and address on the inside of the wrapper, so there will be no confusion of packages. Address all samples to

MINING DIVISION,
University of Wyoming,
Laramie, Wyoming.

FREE MINERAL DETERMINATIONS

All minerals sent to the Division will be determined gratis, provided the sender defrays the express charges and indicates the exact locality where the mineral was found. This work will be done with the blowpipe and consequently will not give the percentage of the elements contained, but merely the composition. After this test the sender may have the mineral assayed as he sees fit.

TYPICAL MINERAL SPECIMENS

The Mining Division keeps on hand small quantities of common minerals, which will be sent at cost price to prospectors who desire them as a guide in the field. Prices charged for these minerals will be made known on application.

MUSEUM SPECIMENS

At all times the University is glad to receive valuable specimens for the Museum and will pay transportation charges on the same. If at any time any one should find

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specimens of rare value which he wishes to sell, proposals of sale will be given consideration.

GENERAL SCIENTIFIC INFORMATION

Scientific information upon any mining topic will be sent free of charge to any one in the state who requests it. This, of course, does not include free assaying. Address

MINING DIVISION,
University of Wyoming,
Laramie, Wyoming.

EQUIPMENT FOR MINING ENGINEER

Division Library. The Mining Engineering and Geological Library comprises more than 1,000 volumes, and additions are constantly being made. Part of the collection consists of Government publications along geological and mining engineering lines. Nine different weekly and monthly journals treating of mining and related subjects are accessible. Many of these publications are complete sets.

Assay Laboratory. For the study of assaying a suitable laboratory has been equipped. It has one gas furnace, a Braun pulverizer, a Blake crusher, a coffee mill grinder, two oil burning furnaces and a 20 horse power electric motor, a set of standard screens, six pulp balances, two button balances and one pyrometer with complete attachments for measuring temperatures.

There are six separate desks supplied with chemical apparatus for assaying work. Adjoining the assay laboratory are supply and balance rooms.

Metallurgical Laboratory. The laboratory contains one Leitz Metallographic Microscope for examination of opaque polished specimens. A grinding and polishing machine with tools and accessories is available for preparing specimens. There are coal, gas and electric furnaces for heat treatment of steels and alloys. A series of type steels and alloys for detailed study are available for those students wishing to

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follow this branch of metallurgy. A dark room is available for photography and blue printing.

Petrographic Laboratory. This laboratory is supplied with two petrographic microscopes and several hundred slides of rocks and minerals. The necessary apparatus for preparing thin sections, including a diamond saw, is available.

Mineralogical Laboratory. A collection of type specimens of minerals and a complete set of wooden models representing the various systems of crystallization are accessible to those following this line of work. There are eight desks with apparatus suitable for mineralogical work.

Lantern Slides. In addition to the apparatus there are several hundred lantern slides arranged in sets, illustrating various phases of metallurgy, geology, mining and kindred subjects. A Bausch and Lomb Balopticon Lantern with an aluminum curtain is used in connection with illustrated lectures.

The Museum, which is described elsewhere, is also open to students desiring to study rocks, minerals, etc.

DESCRIPTION OF COURSES

ECONOMIC GEOLOGY

I. *General Geology.* For description of this course see Division of Letters and Sciences.

II. *Historical Geology.* For description of this course see Division of Letters and Sciences.

III. *Physiography.* This course is devoted to the study of the relief features on the surface of the earth; such as mountain ranges, valleys, plains, basins, etc. The agents operative in producing irregularities such as the above, are studied in detail. The general character of land areas, such as surface and underground drainage, climate, water supply, etc., are emphasized, and practical problems are discussed in relation to rock structure. Rivers, watersheds, etc., are studied with reference to earth movements. Lakes are studied with reference to possible water supply and irrigation projects. Maps issued by the government are used, from which geological sections are

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made, showing rock structure in depth. Interpretation of land forms as indicating the past history of the area under consideration is gone into in detail, particularly in relation to mines and water sup ply. No text will be used, but outside reading will be required. Prerequisite, Geology I and II. For Juniors.

First semester; hours to be arranged; two credit hours.

IV. *Geological Problems.* This course is designed primarily for Mining Engineers. The work and instruction can be modified in such a way as to meet the needs of other departments. By special permission arrangements may be made for Civil, Mechanical and Electrical Engineers, and also for students in the College of Agriculture. Starting with a study of U. S. Geological maps which show topography, soil, culture, precipitation, etc., methods of map-making to show geological structure in depth are then followed. Conventions and designs used to designate the various rock formations, together with geologic time periods, are studied in detail. Application of maps to mine workings, soil distribution, water power, quarries, etc., and the solution of problems occasioned by crustal movements are dealt with. Local geological problems relating to water supply, petroleum, gas, metal deposits, etc., will be discussed in class, and probable solutions arrived at. In addition many problems from other parts of the country will be brought in and probable solutions offered by the students. The course will be the practical solution of problems under the direction of the professor in charge. Pre-requisites, Geology I, II; Economic Geology III; Mining I, II, III, IV, V; Chemistry I, II; Civil Engineering, I. II. For Juniors.

Second semester; hours to be arranged; two credit hours.

V. *Ore Deposits of U. S. and Canada.* A course of study bearing upon the occurrence, geological associations, classifications and origin of the economically important metalliferous minerals, with a consideration of the geology of some of the more important mining districts. Text, Kemp, *Ore Deposits U. S. and Canada.* Prerequisites, Mineralogy I, Chemistry I and II, Geology I, Physics I and II. For Seniors.

First semester; T. Th., 9 o'clock; two credit hours.

VI. *Economic Non-Metalliferous Deposits.* This course is devoted to the economically important non-metalliferous minerals: Coal, petroleum, asphalt, rocksalt, gypsum, building stones, cement, etc. The origin, geological occurrence, production, etc., are dealt with in detail. This course normally follows Geology V and should be taken in connection with it by all Mining Engineers. Texts, Kemp, *On Coal;* Ries, *Economic Geology of the United States.* For Seniors.

Second semester; T. Th., 8 o'clock; two credit hours.

VII. *Practical Oil Geology.* This course is offered to meet the needs of students in all departments who wish to familiarize themselves with the subject of petroleum and natural gas. Special con-

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sideration will be given to the following: The Geochemistry of petroleum and the hydrocarbons; its origin and mode of accumulation; the physical and chemical properties; the structural and stratigraphical relations; its geological and geographical distribution; the location of drill-hole sites; the shale-oil industry of U. S.; factors in the production and the valuation of oil properties; methods of refining, uses, etc.

No text will be used but assigned readings from the following standard works will be a part of the course:

Popular Oil Geology, by Victor Ziegler.
Practical Oil Geology, by D. Hager.
Principles of Oil and Gas Production, Johnson & Huntley.
American Petroleum Industry, Bacon & Hamor.
Field Geology, F. H. Lahee.
Oil Field Development and Petroleum Mining, A. B. Thompson.
Treatise on Petroleum, Boverton and Redwood.
Oil Finding, E. H. Cunningham Craig.
Principles of Stratigraphy, A. W. Grabau.
Engineering Geology, Ries & Watson.
U. S. Geological Reports and Bulletins.

First semester; hours to be arranged; two credit hours.

VIII. *Agricultural Geology.* This course is arranged primarily for students majoring in agricultural subjects. The instruction will cover the main fundamental principles of General Geology in so far as these have direct bearing upon, and show genetic relation to the subject of agriculture.

No text will be used but constant reference to, and assigned readings in, the standard books discussing the various subjects will constitute part of the required work. Local field trips will be made, the results of which, together with the lecture notes, must be properly recorded in an approved note-book.

Second semester; T. Th., 8 o'clock; laboratory, library, and conference hours to be arranged. Three credit hours.

The course is open to Sophomores and also those of approved scholastic training. Students cannot receive credit for Geology I and VIII without permission from the Dean and Division concerned.

IX. *Topographic Interpretation.* This course will cover the main principles employed in the construction of maps and their interpretation. Among the subjects discussed will be; features of Topographic Maps; features of Geologic Maps; Illustrative Maps. Part of the course will be devoted to the preparation of maps showing ideal land forms. Block diagrams and free-hand landscape sketches will constitute part of the assigned work. This will be followed by the construction of maps and miniature models of actual land forms. Field work with carefully tabulated lecture notes will be required. Open to students of approved standing.

Hours and credit to be arranged, the latter not to exceed two hours.

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X. *National Park Geology.* This course is offered as an elective for all students who desire special information relative to the Parks within the National Domain. The course is elective and will deal primarily with the series of events which have produced these wonderlands, and also the forces which are still in operation. The course is open to all students of approved standing.

Hours and credit to be arranged.

METALLURGY

I. *General Metallurgy.* This course takes into consideration a study of the physical and chemical properties of ores and metals as determinants in extraction methods; calorimetry; fuels, natural and artificial; refractory materials; fluxes; pyrometry; furnaces, their classification and structure; blast engines; characteristic metallurgical processes; materials and products of metallurgical processes; alloys; thermal treatment of metals preparatory to their use. The course will be supplemented by visits to nearby plants for inspection. For Sophomores.

First semester; M. F., 2 o'clock; two credit hours.

II. *Iron and Steel.* The subjects to be considered in this course are the following: The source of iron ore, fuels and fluxes; the iron blast furnace; smelting operations products; computation of furnace slags; grades of iron produced; the properties of wrought iron; steel and cast iron, as influenced by composition, mechanical and heat treatment; methods of manufacture. In the laboratory metallographic studies of test pieces are made. This involves a miscoscopic study of the polished specimens after they have received chemical treatment. For Sophomores.

Second semester; M. F., 2 o'clock; two credit hours.

III. *Fire Assaying.* Fire assays of ores of gold, silver, lead, copper, etc. A large number of samples from sampling works are assayed by each student. The accuracy of the work done by each student is checked by reports on the samples from practical assayers. A study of the composition of typical slags is followed by a widely varying series of samples of ores and products; such as assaying Dorè bullion; copper pigs; concentrates; zincbox residues; platinum concentrates, etc. Text, Lodge, *Notes on Assaying.* For Seniors. Fee, $5.00.

First semester; lectures, W., 11 o'clock; laboratory, S., hours to be arranged; three credit hours.

IV. *Wet Assaying.* The term by which this course is described implies that it has to do with those determinations, which employ methods of volumetric quantitative analysis. In the course the methods employed by smelters and ore-buying companies are taught. The metals determined include lead, copper, iron, silica, zinc, lime, alumna and sulphur. At the close of this course a few lectures are given upon the buying and selling of ores, which explain

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the systems of sampling; the grab, control, and umpire samples; the meaning of penalties and premiums, and the ways of mixing dry and lead ores. Text, Low, *Technical Method of Ore Analysis.* For Seniors. Fee, $2.50.

Second semester; lectures, W., 11 o'clock; laboratory, S., hours to be arranged, three credit hours.

V. *Copper, Gold and Silver.* Lectures and recitations on the ores of these metals with a discussion of the properties and metallurgical processes for recovery; the adaptability of the various methods to the ores, and a study of the final refined products. For Seniors.

First semester; M. F., 3 o'clock; two credit hours.

VI. *Lead and Zinc and Metallurgical Laboratory.* Lectures and recitations on the ores of lead and zinc and their occurrence in nature The various methods by which reductions are made, involving the calculation of the furnace charges, are fully discussed. Various experiments bearing upon the metallurgy of these and other metals are performed by the students. For Seniors.

Second semester; M. F., 3 o'clock; two credit hours.

MINERALOGY

II. *Crystallography and Blow Pipe.* A brief course in crystallography, blow pipe analysis, and systematic mineralogy, consisting of lectures and laboratory work as follows:

Crystallography—A study of the properties of crystals and the crystal systems, with laboratory exercises, using natural crystals and crystal models. Considerable work is required in drawing crystal forms and measuring crystal angles.

Chemical Mineralogy—In blow pipe analysis sufficient practice is required to familiarize the student with all the ordinary blow-pipe tests for mineral identifications.

Physical Mineralogy—The student is required to become thoroughly familiar with the methods of identifying all the more common minerals by their physical characters, such as crystalline form, cleavage, gravity, luster, streak, hardness, and color, the student being required to determine seventy-five unknown minerals. The uses, localities and productions of the minerals of economic importance are discussed. Texts, Moses and Parsons', *Mineralogy and Blow-Pipe Analysis;* Crosby, *Tables for the Determination of the Common Minerals.* For Sophomores. Fee, $1.50.

Second semester; M. W., 9 o'clock; two credit hours.

III. *Mineralogy and Petrology.* A study of the economic minerals with a view to enabling the student to recognize them with no aid other than a hand-glass and pocket-knife. Over one hundred different minerals must be learned by each student. The last to be

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studied are the rock-forming minerals and the latter half of the term is given over to a study of rocks, the object being to teach a field classification of such nature that the various rocks may be recognized without the aid of laboratory tests or of the miscoscope. Hundreds of rocks are thus determined, including igneous, sedimentary and metamorphic. Alteration products of all types of rocks are determined in relation to ore deposits, etc. Text, Luquer, *Minerals in Rock Sections.* Pre-requisites, Mineralogy II, Geology I, Physics I, Chemistry I, II. For Juniors.

First semester; M. F., 11 o'clock; two credit hours.

IV. *Petrography.* This course is devoted to the study of minerals in thin sections by use of the petrographic misroscope. After the more important rockmaking minerals have thus been studied, thin sections of a wide series of rocks are made with the purpose of identifying the rock. The method of preparing thin sections is taken up and the students are required to prepare many sections for themselves. For Juniors.

Second semester; M. W., 8 o'clock; two credit hours.

MINING

I. *Methods.* (a) Prospecting, (b) Tunneling, (c) Sinking, (d) Timbering, (e) Ventilation, (f) Handling of Materials. It is the aim of this course to cover the modern methods of prospecting by (1) ditches, (2) pits, (3) churn and diamond drills, etc.; methods of tunneling by hand, machine drill and boring machines, and methods of shaft sinking. The timbering and ventilation of tunnels and shafts is considered, together with modern methods employed in handling excavated materials and water. Laboratory work in timber framing, drilling, etc., is provided. For Juniors.

First semester; W., 3 o'clock; one credit hour.

II. *Machines and Appliances.* (a) Mining Machinery, (b) Stoping and Filling, (c) Open Cut Mining. In this course are taught the classes of machinery and appliances employed in the equipment of mines, their relative merits, etc. Included in the instruction are methods of underhand and overhand stoping, the caving and "glory hole" systems of mining and surface (open cut) mining with the steam shovel. For Juniors.

Second semester; W., 3 o'clock; one credit hour.

III. *Mining Operations.* (a) Surface and Underground Machinery, (b) Development and Method of Working. A course devoted to the study of hoisting and conveying machinery, pumps, compressors, machine drills, mine cars, automatic chute gates and dumping machinery and aerial and surface trams. The transportation of ores to mills and smelters, etc. Text-books, Ihlsing and Foster. For Juniors.

First semester; T., 3 o'clock; one credit hour.

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IV. *Mine Examination and Reports.* This course takes up the approved methods of mine sampling, the estimation of volumes and average assay values. The information to be incorporated in a complete report on a mining property is considered and some typical reports are read and discussed. For Juniors.

Second semester; T., 3 o'clock; one credit hour.

V. *Drafting and Design.* (a) Mining Machinery, (b) Mine Plant, (c) Mill and Smelter Design. Students in this course are assigned problems in mine plants, mills, and smelters which employ the application of mechanical drawing principles, in drawing mill buildings and mine machinery. The course is principally devoted to lectures on ore bin, wood and iron mill construction, with preparation of working drawings, estimates, specifications, and bills of materials. For Seniors.

First semester; T. Th., 3 o'clock; two credit hours.

VI. *Drafting and Design.* This course is a continuation of Mining V and is chiefly laboratory work. Special problems in designing are given, an approved one of which may be taken for a thesis. For Seniors.

Second semester; hours and credits to be arranged.

VII. *Colliery Engineering and Regulations.* This course is offered to those who wish to give special attention to coal mining. The subjects considered in it include methods of prospecting, acquiring and opening coal properties; methods of mining the coal and coal cutting machinery; attention is given to mine gases and ventilation, to shot-firing, and the screening, washing and loading of coal. For Seniors.

First semester; T. Th., 2 o'clock; two credit hours.

VIII. *Mine and Mineral Land Surveying.* It is the object of this course to teach the application of the principles of surveying to the work of a specialized nature required of mining engineers. A glass mine model is used, each student having to prepare a level from typical underground survey notes. In connection with the instruction in mineral land surveying the students are required to make the office calculations and prepare the documents and plats necessary in securing patent to lode and placer claims. For Seniors.

Second semester; T. Th., 2 o'clock; two credit hours.

IX. *Administration, Organization and Business Management.* This course has to do with the economics of mining and the conditions affecting production. For Juniors.

First semester; hours and credits to be arranged.

X. *Mining Law.* A brief review of the origin and history of mining laws, followed by a study of the present laws. The rules governing location, annual labor and steps to secure patent are considered in relation to lode and placer claims, and mill sites, and

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the variations arising under the Law of the Apex are discussed. Text, Morrison's *Mining Rights.* For Seniors.

Second semester; hours and credits to be arranged.

XI. *Ore Dressing and Concentration.* This course gives special attention to the laws and principles of crushing, sizing, classification, jigs, sand and slime concentrations, magnetic and electrostatic separation, etc. The work is largely theoretical, but experiments in sizing, sorting, panning, crushing, with some table work are performed from time to time. Modern milling plants are studied with the view of familiarizing the student with the different appliances, and their capacities under various conditions. General considerations and ideas of ore dressing, etc. Text, Richard's *Ore Dressing.* Pre-requisites, Mineralogy II, Physics I and II. For Juniors.

First semester; M. F., 10 o'clock; two credit hours.

XII. *Ore Dressing.* A course chiefly experimental in character. Various ore dressing machines are employed in performing experiments in ore concentration and dressing. Special attention and study are given to adjustments and successful operation for various types of ore. Pre-requisites, Mining XI, Physics I, II, M. E. III, IV. For Juniors.

Second semester; hours to be arranged; four credit hours.

XIII. *Memoirs.* The object of this course is to teach the student how and where to find the most recent articles, appearing in current literature on mining and geology. Subjects of a general nature are assigned to students, upon which they are required to write reports to be read before the assembled class. The nature of the subjects assigned is closely allied with the nature of the thesis to be prepared by each student the following semester. This work must be completed before the thesis is begun. In a sense it is pre-requisite to the thesis. For Seniors.

First semester; hours to be arranged; one credit hour.

XIV. *Thesis.* Each candidate for a degree in the Mining Engineering course is required to present a thesis on some topic which has been previously approved by the professor in charge of his major subject. The thesis subject should be outlined tentatively by the end of the first week of the second semester. This essay must represent the result of the student's own work along lines closely allied with the mining industry. The size of the thesis will largely depend on the nature of the subject selected. As a rule the thesis should be 10,000 or 12,000 words in length. When the thesis has been approved, which should not be later than May 1st of the year in which graduation takes place, the candidate is required to file with the Registrar two legibly written or typewritten copies on firm, strong paper, eleven by eight and a half inches in size with inner margin of one and a half inches. Some students prefer to have the thesis bound in stiff covers. This is to be recommended, but it is not re-

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quired. Where maps and photographs accompany the written matter of the thesis, these should be mounted in such a manner that there will be no danger of their being lost. In some cases it may be necessary for two or more students to work upon the same problem, in which instance a joint report would be required. For Seniors.

Second semester; hours to be arranged; two credit hours.

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The College of Education

The College of Education has for its province the training of all kinds of teachers as well as all types of educational leadership needed for service in the schools of the state. As at present organized, it includes two main divisions, viz: the State Normal School, which is concerned with the training of elementary teachers for both city and rural schools; and Secondary Education, which has to do with the training of high school teachers. In planning the courses of study three lines of activity have been borne in mind: (1) a broad general education as a basis for subsequent work; (2) professional study designed to give insight into educational theory and problems; (3) practice in teaching under critical and sympathetic supervision.

ADVANTAGES OF ORGANIZATION

Since teaching is peculiarly a profession demanding broad and liberal training, it is obvious that departments of education organized in connection with Universities possess superior advantages. Since not all of the course is of a professional nature, students are given wide range of choice among the various courses offered by the faculty of the University. Teachers training for high school work thus have excellent opportunities for specializing in the particular subjects they plan to teach.

ADMISSION

The requirements for admission to the College of Education are the same as those of the other Colleges of the University. (See page 44.) Advanced standing may be obtained by examination or by the presentation of credits from other Normal Schools or Universities.

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State Normal School

The State Normal School comprises the Department of Elementary Education for city teachers and supervisors for city schools, and the Department of Rural Education, for the training of rural teachers and rural school supervisors. The entrance requirements for both these departments are the same, viz., a four-year high school course. Both offer a two-year course for graduation, requiring the completion of 63 semester hours of work. The student receives upon graduation the diploma of the State Normal School, which leads to a State Life Certificate.

DEPARTMENT OF ELEMENTARY EDUCATION

COURSE OF STUDY

The following tabular view covers the required 63 credit hours. Electives for additional credit hours may be taken by students of approved scholarship standing.

FIRST YEAR

First Semester		Second Semester	
English I—Composition	3	English II—Composition	3
Education Ia—Child Psychology	3	Education II—Educational Psychology	3
Education III—Special Methods	2	Education IV—Special Methods	2
Education XXIII—Public School Music	2	Education XXIV — Public School Music	2
Education XXV—Interpretative Reading	1	Education XXVI—Interpretative Reading	1
Physical Training	½	Education XLIV—Nature Study	2
Education LXXIII — Penmanship	1	Physical Training	½
Education LIX — Industrial Arts	2	Education LXXIV — Penmanship	1
		Education LX—Industrial Arts	2
	14½		16½

SECOND YEAR

Education V—Co-operative Teaching	5	Education VI — Co-operative Teaching	5
Education VII—Principles of Teaching	2	Education VIII — History of Education	2
Education XXVII — Hygiene of the School Child	2	Education XXVIII—Play and Playgrounds	2
Political Economy XV—Economic Wyoming	3	History IV	3
English III—History of English Literature	3	English IV—History of English Literature	3
Physical Training	½	Physical Training	½
Education LXI — Industrial Arts	1	Education LXII — Industrial Arts	1
	16½		16½

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Those who complete this course are entitled to a Wyoming Provisional Elementary Certificate. After two years of experience in addition to the directed teaching have been secured, a Professional Elementary Certificate, valid for life, will be given.

FOUR YEAR COURSE IN ELEMENTARY EDUCATION

Experience has shown that there are every year a number of students who, though graduates of the Normal School desire to pursue still further their professional study in the field of Elementary Education. With the view of meeting the needs of such students the University offers the degree of Bachelor of Arts to all students who after graduation from the Normal School pursue two more years of work under the direction of the College of Education, observing the following regulations:

(1) The student shall observe the requirements as to major and minors given on pages 51 and 55 of this catalog. Education may be chosen as the major subject.

(2) At the beginning of the Junior year each student shall submit his entire course for the two years to the advisory committee in the College of Education for its approval.

Department of Rural Education

This department offers to those who are looking forward to service in the rural schools as teachers and community leaders the opportunity to make special preparation and receive special training in that work. All such will be interested in the courses outlined and offered to suit their needs.

ADMISSION

Requirements for admission are uniform with the general university requirements as printed elsewhere in this catalogue. See Admission to the University.

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Mature students who have not had the advantage of a full four-year high school course may, under certain conditions, be admitted as special students.

THE RURAL TRAINING SCHOOL

A demonstration rural school is provided on the campus. This training school is an integral and important part of the department. In it the student observes the work regularly done and does directed teaching under a trained critic teacher. In this way the teacher in training has opportunity to observe and to practice good procedure in both class management and methods of teaching in the rural schools. The theory learned in the classroom is re-enforced and further clarified by the actual teaching required of the student.

The building occupied by the rural training school is complete and modern in every way. It provides for the following activities in its course of study and general school work: cooking, sewing, manual training, shop work, agricultural laboratory, indoor play, and a library or reading room.

ONE AND TWO YEAR COURSES

The following courses of study have been prepared to meet the different needs of those who may be interested. These courses are progressive and articulate directly with each other.

The first year of the two year course is a unit within itself and may be taken alone. It has been specifically prepared for those who can take but one year. The work in reviews, methods, and observation puts the student in immediate contact with real school work. Along with the work in observation there will be opportunity to do directed teaching in the rural training school. It will be noted how complete the first year is and what specific help can be obtained from it as tabulated below.

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FIRST YEAR

First Semester		Second Semester	
English I—Composition	3	English II—Composition	3
Psychology I—Introductory	3	Psychology II—Educational	3
Education XXIII—Public School Music	2	Education XXIV—Public School Music	2
Education XXIX—Agriculture	2	Education XXX—Agriculture	2
Education XLVII — Domestic Art	2	Education XLVIII — Domestic Science	2
Education XLIX — Reviews, Methods, and Observation	2	Education LX—Reviews, Methods, and Observation	2
Education LXIX—Story Telling	1	Education LXX—Story Telling	1
Physical Training or Military Drill	½	Physical Training or Military Drill	½
	15½		15½

A regular student completing the one year course, and who has had two years of experience, will be granted a Class A, Rural Certificate, valid for three years and renewable. A student in full standing with one year of experience and who completes one semester's work of this course will be granted a Class B, Rural Certificate, valid for two years and renewable.

The two year course is designed for those who are able to complete the work for the diploma. The first year of this course is identical with the one year course as tabulated above. Sixty-three semester hours are required for graduation. Electives for additional credit hours above the required number in either the one or two year course may be taken by students of approved scholarship standing.

SECOND YEAR

First Semester		Second Semester	
Education XXXVII — Special Methods in Rural Schools	3	Education XXXVIII — Class Management in Rural Schools	3
Education XXXIX—Directed Teaching	3	Education XL—Directed Teaching	4
Education XXVII—Hygiene of the School Child	2	Education XXVIII—Play and Playgrounds	2
Education VII—Principles of Teaching	2	Education XLIV—Nature Study	2
Education XLV—Manual Training	1	Education XLVI—Manual Training	1
Education LIII—Drawing and Industrial Arts	2	Education LIV—Drawing and Industrial Arts	2
Political Economy XV — Economic Wyoming	3	Education LXXII—Library Science	1
Physical Training or Military Drill	½	Physical Training or Military Drill	½
	16½		15½

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A graduate from the two year course will be granted a diploma, which will entitle the holder with three years of experience, to a Professional Certificate, valid for life in either rural or elementary city schools.

FOUR YEAR COURSE

The demand for expert supervisors of our rural schools parallels the demand for trained teachers in those schools. Also, a new need has arisen in the demand for directors of rural teacher training in high schools. In recognition of these needs, there is provided the following four-year course for rural school supervisors, directors of normal training in high schools, supervising or critic teachers, and county superintendents of schools. This course leads to the degree of B. A., and requires 126 credit hours for graduation. Electives for additional credit hours above the required number may be taken by students of approved scholarship standing.

TABULAR OUTLINE OF FOUR YEAR COURSE

(The first two years are identical with the preceding two-year course. Provisional outline of third and fourth years as given below.)

THIRD YEAR

First Semester		Second Semester	
Education IX—Mental Measurements	3	Education X—Experimental Education	3
Education XLI—Rural Economics	3	Education XLII—Rural Sociology	3
Military Drill (men)	½	Military Drill (men)	½

In addition to subjects listed above, students must pursue courses in the subjects indicated below, the selection of courses being subject to the approval of the student's Advisory Committee: English, 6; History, 6, Sciences, 6; *Biology, Chemistry, Physics, Physiology, and General Sciences.

*Selected from

FOURTH YEAR

First Semester		Second Semester	
Education LV — Rural School Organization, Administration and Supervision	3	Education LVI — Observation and Practice Supervision	2
Education LVII—Educational Sociology	3	Education LVIII—Rural School Problems	1
Military Drill (men)	½	Education VIII—History of Education	2
		Military Drill (men)	½

In addition to subjects listed above, students must pursue courses in the subjects indicated below, the selection of courses being subject to the approval of the student's Advisory Committee: Agriculture, 4; Home Economics, 4; Manual Training, 4; Political Economy or Political Science, 3; Electives, 5.

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Secondary Education

LINES OF WORK

There are two general lines of work in secondary education, one preparing for the teaching of the academic subjects, e. g., English, History, Science, Foreign Language, the other preparing for the teaching of Home Economics, Agriculture, and Industrial Subjects in the high schools of the state.

REQUIREMENTS FOR TRAINING OF TEACHERS OF ACADEMIC SUBJECTS

The curriculum covers a period of four years, and 126 semester hours are required for graduation. Those who complete the course are granted a degree of Bachelor of Arts in Education, and under the Wyoming State Law are entitled to a provisional certificate valid for teaching in any high school in the state. When two years of experience in addition to the directed teaching (Education XV, XVI) have been secured, a Class I High School Certificate is given.

Attention is called to the following regulations:

(1) All students must select as a major some one subject which they expect to teach, taking not less than 26 and not more than 50 semester hours in this subject.

(2) Students must farther select as minors two additional subjects for High School teaching, doing not less than 15 semester hours work in each.

(3) The selection of the major and minor subjects should be made and signified to the Chairman of the Student's Advisory Committee, not later than the beginning of the Sophomore year and preferably at the beginning of the Freshman year.

(4) In addition to the required work in majors and minors, twenty-six semester hours in professional branches in Education are required as outlined below.

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CURRICULUM FOR TRAINING OF ACADEMIC TEACHERS

The following tabular view covers the required 126 hours for graduation. Electives for additional credit hours may be taken by students of approved scholarship standing.

FRESHMAN YEAR

First Semester		Second Semester	
English I	3	English II	3
Botany I or Zoology I (advised)	3	Botany II, or Zoology II (advised)	3
Subjects student intends to teach	9	Subjects student intends to teach	9
Physical Training or Military Drill	½	Physical Training or Military Drill	½
	15½		15½

SOPHOMORE YEAR

Psychology I	3	Psychology IV	5
Political Economy XI (advised)	3	Political Economy XII (advised)	3
Subjects student intends to teach	10	Subjects student intends to teach	8
Physical Training or Military Drill	½	Physical Training or Military Drill	½
	16½		16½

JUNIOR YEAR

Psychology III (advised)	5	Education LXIV	2
Subjects student intends to teach	10	Subjects student intends to teach	13
Military Drill (for men)	½	Military Drill (for men)	½
	15½		15½

SENIOR YEAR

Education XIII	2	Education XIV	2
Education XV	5	Education XVI	5
Subjects student intends to teach	8	Education LXVI	2
Military Drill (for men)	½	Subjects student intends to teach	6
		Military Drill (for men)	½
	15½		15½

REQUIREMENTS FOR TRAINING OF VOCATIONAL TEACHERS

This work is done under the provisions of the federal Smith-Hughes Act, the curriculum being arranged so as to meet the requirements of both the federal and the state

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vocational boards. The curricula in Home Economics and in Agriculture are four years in length and those who complete either are granted the degree of Bachelor of Arts. Graduates are entitled to the same certificate as those who complete the curriculum for the training of academic teachers, that is a provisional certificate which, after two years of experience in addition to the directed teaching, leads to the Class I, High School Certificate.

CURRICULUM FOR TRAINING HOME ECONOMICS TEACHERS

FRESHMAN YEAR

First Semester		Second Semester	
English I	3	English II	3
Chemistry I	4	Chemistry II	4
H. E. I	2	H. E. II	2
H. E. III	3	H. E. IV	3
Elective	3	Elective	3
Physical Training	½	Physical Training	½
	15½		15½

SOPHOMORE YEAR

H. E. V.—Research Foods	3	H. E. VI—Dietetics	3
H. E. VII — House planning and Interior Decoration	3	H. E. VIII—Costume and Designing	3
Elective	9	Household Chemistry	3
Physical Training	½	Elective	6
		Physical Training	½
	15½		15½

JUNIOR YEAR

Chemistry VII—Organic	5	Chemistry VIII—Foods	5
Bacteriology V—Household	3	H. E. XIV—House Problems	3
Psychology I—Elementary	3	Education LXIV—Principles of Teaching	2
H. E. XI—Ele. Dressmaking	2	Elective	6
Elective	3		
	16		16

SENIOR YEAR

Education XIII—H. S. Organization	2	Education LXVI — Vocational Education	2
H. E. IX—Evolution of Family	3	Education XVI — Practice Teaching in H. E.	5
H. E. XIII—Textiles	3	H. E. X—Household Management	3
Education XV—Practice Teaching in Home Economics	5	H. E. XII—Advanced Dressmaking	3
Elective	3	H. E. XVI—Nutrition	3
	16		16

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CURRICULUM FOR TRAINING AGRICULTURAL TEACHERS

FRESHMAN YEAR

First Semester		Second Semester	
English I—Compositions	3	English II—Composition	3
Botany I—General	5	Botany II—General	5
Agro. I—Cereal Field Crops	3	Agro. II—Field and Farm Forage	3
Ani. Hus. I—Breeds of Live Stock	3	Ani. Hus. II—Breeds of Live-stock	3
Drill	½	Drill	½
Elective	2	Elective	2
	16½		16½

SOPHOMORE YEAR

Chemistry I—General Inorganic	4	Chemistry II—General Inorganic	4
Ani. Hus. III—Stock Judging	2	Ani. Hus. IV—Stock Judging	2
Vet. III—General Bacteriology	4	Vet. IV—Veterinary Elements	4
Zoology I—General	4	Zoology II	4
Drill	½	Drill	½
Elective	2	Elective	2
	16½		16½

JUNIOR YEAR

Psychology I	3	Education LXIV—Principles of Teaching	2
Drill	½	Drill	½

SENIOR YEAR

Education XIII—High School Adm.	2	Education LXVIII—Vocational Education	2
Education XV—Directed Teaching	5	Education XV—Directed Teaching	5
Drill	½	Drill	½

REQUIRED IN JUNIOR OR SENIOR YEARS

Chemistry III, IV—Qualitative and Quantitative Analysis	10
Agro. V—Soils	3
Agro. XIV	2
Zoology IX, X—Organic Evolution and Heredity	4
An. Hus. VII—Feeds and Feeding	5

THE UNIVERSITY HIGH SCHOOL

The training school for secondary teachers is the University High School which includes grades seven to twelve. A special catalogue of the school is issued and a copy may be secured by writing to the Principal or to the Registrar.

The following curricula are offered:

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COLLEGE PREPARATORY CURRICULUM

JUNIOR HIGH SCHOOL

Seventh Grade

English.
French (second semester).
History.
Mathematics.
Science.
Manual Training.
Home Economics.
Physical Training.
Music.

Eighth Grade

English.
French.
History.
Mathematics.
Science.
Manual Training.
Home Economics.
Physical Training.
Music.

SENIOR HIGH SCHOOL

First Year

Required:
- English A, B.
- General Science A, B.
- Mathematics A, B.
- Language:
  - Latin A, B, or French A, B.
- Physical Training.

Second Year

Required:
- English C, D.
- History A, B.
- Mathematics C, D.
- Language—continuation of the language elected in the first year.
- Physical Training.

Electives for First and Second Years:
- Home Economics, ½ unit a year.
- Manual Training, ½ unit a year.

Third Year

Required:
- English E, F.
- History C, D.
- Military Drill (for boys); Physical Training (for girls).

Electives:
- Mathematics E, ½ unit. (Required for entrance to the College of Engineering.)
- Mathematics F, ½ unit. (Required for entrance to the Agricultural and Engineering Colleges and of students who elect College Mathematics.)

Fourth Year

Required:
- Science, 1 unit—if not elected in third year. (See list of electives below.)
- Military Drill (for boys): Physical Training (for girls).

Other Electives for Third and Fourth Years

Sciences:
- C. Physical Geography, ½ unit.
- D. Physiology, ½ unit.
- E, F. Zoology. (Recommended for those who intend to enter the Normal School.)
- H. Botany, ½ unit.
- I, J. Physics. (Required for entrance to the Colleges of Agriculture and Engineering.)
- K, L. Mineralogy, ½ unit.

English G, H.
French.
History, E, F.
Latin.
Agriculture.
Commercial Studies.
Home Economics.
Manual Training.

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TWO YEAR COMMERCIAL CURRICULUM

FIRST YEAR

(Standard of Third Preparatory Year)

First Semester	Credit	Second Semester	Credit
Bookkeeping A	½ unit	Bookkeeping B	½ unit
Stenography A	½ unit	Stenography B	½ unit
English E	½ unit	English F	½ unit
Com. Arithmetic A	¼ unit	Com. Arithmetic B	¼ unit
Typewriting A	½ unit	Typewriting B	½ unit
Military Drill or Physical Training	No unit	Military Drill or Physical Training	No unit
Total	2¼ units	Total	2¼ units

SECOND YEAR

(Standard of Fourth Preparatory Year)

	Credit		Credit
Bookkeeping C	½ unit	Bookkeeping D	½ unit
Stenography C	½ unit	Stenography D	½ unit
Mathematics A	½ unit	Mathematics B	½ unit
Typewriting C	¼ unit	Typewriting D	¼ unit
Typewriting E	¼ unit	Typewriting F	¼ unit
Marketing A	¼ unit	Military Drill or Physical Training	No unit
Military Drill or Physical Training	No unit		
Total	2¼ units	Total	2 units

DESCRIPTION OF COURSES IN EDUCATION

III, IV. *Special Methods.* A study of the methods of teaching the subjects of the primary and intermediate grades. Also observation in the training school. This course is required of those who plan to take Education V and VI.

Both semesters; T. Th., 11 o'clock; two credit hours each semester.

V, VI. *Training for Grade Teachers.* The Training School aims to establish the proper relation between theory and practice; to demonstrate practically how teaching may be brought into harmony with certain fundamental principles. It is the testing laboratory for pedagogical theory, and it is considered as important in the professional department as the laboratory is in the Department of Science. Student teachers are given charge of a class for one hour a day during each semester. Pre-requisites, Education III and IV.

Both semesters; hours to be arranged; five credit hours each semester.

VII. *Principles of Teaching in Elementary Schools.* The purpose of this course is to derive from modern scientific psychology those general principles which bear upon all successful teaching and

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to give the prospective teacher such mastery of these principles as will make a real difference in his actual work in the class room. Psychology I is a pre-requisite.

First semester; M. W., 10 o'clock; two credit hours.

VIII. *History of Education.* The emphasis in this course will be placed upon the study of leading educational reformers. The relation of these men to the educational movement of their times will receive due attention; but a thorough study of a few men rather than an attempt to cover the entire field of the history of education, will be the aim. Reading of a few of the more significant educational classics will be made. Each student will be asked to select, early in the course, some one educational reformer for special study. The bearing of the subject upon present educational practice will be constantly borne in mind. Psychology I is a pre-requisite.

Second semester; M. W., 10 o'clock; two credit hours.

X. *Experimental Pedagogy.* Consideration of the experimental methods of attacking pedagogical problems with a review of reports on the experimental investigation of such problems as those of the learning process, the practice curve, formal discipline, intellectual fatigue, intellectual efficiency. Pre-requisite, Psychology II.

Second semester; M. W. F., 1 o'clock; three credit hours.

XIII, XIV. *High School Organization and Administration.* A course designed to give high school teachers an insight into those administrative problems with which every teacher should be acquainted. This course will be closely connected with the directed teaching course, Education XV, XVI.

Both semesters; T. Th., 11 o'clock; two credit hours each semester.

XV, XVI. *Directed Teaching for High School Teachers.* The purpose of this course is to secure a vital correlation between the theory of education and its practice. It includes observation, special methods, and actual teaching under careful supervision. Pre-requisites, Psychology I, Education LXIV. Education XV and either Education XVI or Education LXVIII must be taken in connection with this course.

Both semesters; hours to be arranged; five credit hours each semester.

XXIII, XXIV. *Public School Music.* Purpose of public school music; rote songs and how to teach them; the child voice; monotones; beating time; part singing; individual singing; the changing voice.

Both semesters; T. Th., 1 o'clock; two credit hours each semester.

XXV, XXVI. *Interpretative Reading.* This course is planned to meet the needs of elementary teachers. Special attention will be given to the classics that are adapted to the elementary grades with

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a view to training teachers to a more intelligent and sympathetic interpretation of the texts from the child's view point. Dramatizations will be a prominent feature of the course.

Both semesters; M., 1 o'clock; one credit hour each semester.

XXVII. *Hygiene of the School Child.* This course has to do with the physical development of the school child, the theory of children's diseases, abnormal conditions and the consideration of their prevention and remedy. The evil effects of the school system upon children and how these effects may be prevented are also considered.

First semester; hours to be arranged; two credit hours.

XXVIII. *Play and Playgrounds.* This course will deal with the following topics: Nature and Function of Play in Education; The Playground Movement; Practical Conduct of Playgrounds; Their Organization and Administration; Social Conditions of Neighbor hood; Hygiene and First Aid.

Second semester; hours to be arranged; two credit hours.

XXIX. *Agriculture.* The purpose of this course is to give the student a practical working knowledge of the essentials of agriculture. A study is made of the origin, composition, and properties of soils, the history, culture, uses, and distribution of the principal farm crops, and the types and breeds of farm animals. Practical school room demonstrations are used whenever possible. Laboratory and reference reading to be arranged.

First semester; T. Th., 9 o'clock; two credit hours.

XXX. *Vegetable Gardening.* The planning and arrangement of the school and home garden. The construction and management of hot-beds and cold frames. Methods of culture for our common vegetable crops with special emphasis on those adapted to Wyoming. Laboratory and reference reading to be arranged.

Second semester; T. Th., 9 o'clock; two credit hours.

XXXI, XXXII. *School Organization, Administration and Supervision.* This course is planned to give an insight into present day general school problems and to teach something of the scientific method as applied to educational administration.

Both semesters; hours to be arranged; two credit hours each semester.

XXXVII. *Special Methods in Rural Schools.* The aim of this course is to present the best methods of conducting the recitation, and will be given from the point of view of the rural teacher. Each subject in the rural elementary school curriculum is considered as to its functions; the selection and organization of its subject matter; how to secure interest in it; and how to present it to a class. The use of standard scales and tests will be treated in connection with each of the several subjects.

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First semester; M. W. F., 8 o'clock; three credit hours.

XXXVIII. *Class Management in Rural Schools.* The unit for study in this course will be the one-teacher rural school, and will deal with the factors involved in the organization and management of such school. Some of these factors are: (1) the aim of school management; (2) class-room organization, classification of pupils, the daily program, examinations, promotions, school records and reports; (3) apparatus and equipment, kind, use, care of; (4) school sanitation and health of school children; (5) discipline and moral training; (6) the teacher, his training, a community leader.

Second semester; M. W. F., 8 o'clock; three credit hours.

XXXIX, XL. *Observation and Practice.* The purpose of this course is to re-enforce and further clarify the work of the two preceding courses. Teachers in training will have an opportunity to observe and to practice the best methods of procedure in class management in rural schools and in teaching, in the demonstration rural school. The first semester will emphasize observation; the second semester, practice teaching.

Both semesters; hours to be arranged; three credit hours first semester; four credit hours second semester.

XLI. *Rural Economics.* This course will consist of a brief survey of the history of modern agriculture; a statement of foundation principles; factors of agricultural production; management and improved means of distribution of both the product and the income A study of economic and industrial rural life with suggested means of improvement. It will be given from the point of view of the rural school supervisor.

First semester; M. W. F., 10 o'clock; three credit hours.

XLII. *Rural Sociology.* A study of rural conditions; types of rural communities; the physical and social influences that have produced them; rural institutions, rural customs and rural needs; the reorganization and direction of rural education to meet the changed social conditions of rural communities.

Second semester; M. W. F., 10 o'clock; three credit hours.

XLIV. *Methods in Nature Study.* The object of this course is to provide the necessary scientific knowledge for conducting nature study courses in elementary schools, both city and rural, and to consider the best methods of presenting such work in the schools. An endeavor will be made to aid the teacher in directing primary students in obtaining a knowledge and an appreciation of the natural objects with which they come in contact. Available magazines and books will be studied and some time will be devoted to visitation and reports.

Second semester; hours to be arranged; two credit hours.

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XLV, XLVI. *Manual Training.* An elementary course in woodworking, covering such simple work as may be given in any well organized rural school. It will consist of a series of farm and household problems having direct application to the interests and needs of rural children. At least one double recitation period each week.

Both semesters; hours to be arranged; one credit hour each semester.

XLVII, XLVIII. *Survey Course in Domestic Art and Domestic Science.* See Courses XXI and XXII, under Division of Home Economics, College of Agriculture.

Both semesters; T. Th., 3-5 o'clock; two credit hours each semester.

XLIX, L. *Reviews, Methods and Observation.* These courses will review the subject-matter of several of the more important branches of the elementary school curriculum. There will be instruction in the best methods of presenting them to a class. The student will be directed to observe the teaching of these subjects in the rural training school. A limited opportunity for practice teaching may be given. Three recitations per week.

Both semesters; hours to be arranged; two credit hours each semester.

LI, LII. *Methods in General Science.* Owing to the rapid introduction of General Science into the upper grades of the elementary school and the first year of high school, this course will consider the most acceptable material for such courses. The principles involved in the home and community life of the child will be explained and methods of presenting such courses, laboratory equipment, text books, etc., will be considered.

Both semesters; hours to be arranged; two credit hours each semester.

LIII, LIV. *Public School Drawing and Industrial Art.* A course in methods of elementary handwork for rural teachers. Drawing will cover representation, illustration, perspective, nature drawing, design and color. Industrial Art will cover clay modelling, cardboard construction, basketry, posters, enamel work, elementary bookbinding, weaving, free hand cutting, stencil work, block printing, simple scroll saw work, household design and picture study.

Both semesters; hours to be arranged; two credit hours each semester .

LV. *Organization, Administration and Supervision of Rural Schools.* This course will consider the several units of rural school organization, such as district, county and state systems. The emphasis will be placed on the county as the unit. Other topics will be: (1) Organization, the underlying principles, different units of rural school organization, consolidation of schools, boards of education, school revenues and expenditures, physical factors, buildings,

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grounds, apparatus, equipment, teachers' cottages; (2) Administration, the curriculum, its instruction and adaptation to rural needs, daily program, uniform examinations and promotions, systems of records and reports, play, social hygiene and sanitation, medical inspection of school children, compulsory education law, school and community co-operation; (3) Supervision, supervision of classroom instruction, rating of teachers, improvement of teachers in service, use of standard tests and scales, efficiency surveys of rural schools.

First semester; M. W. F., 2 o'clock; three credit hours.

LVI. *Observation and Practice Supervision.* The purpose of this course is to provide actual practice in the solution of the problems of rural school supervision as discussed in the preceding course. It is planned to have several affiliated rural schools accessible to the University where the work of this course may be done.

Second semester; M. W., 2 o'clock; two credit hours.

LVIII. *Rural School Problems.* This course will offer an opportunity to consider some of the vital problems of the rural schools as discovered by the student in actual practice. It will serve as a discussion course, and will supplement the course in Observation and Practice Supervision.

Second semester; F., 2 o'clock; one credit hour.

LIX, LX. *Industrial Art in Elementary Schools.* A course in methods of presenting problems of hand work to grade children. It will deal with problems such as weaving basketry, costume designing, etc., through which the child is encouraged to develop a general appreciation of the beautiful in his every day life.

Both semesters; hours to be arranged; two credit hours.

LXI, LXII. *Industrial Art in Elementary Schools.* The preceding course continued.

Both semesters; hours to be arranged; one credit hour.

LXIV. *Principles of Teaching in Secondary Schools.* A discussion of those principles that are fundamental in high school teaching. It is intended to make the principles concrete through class room observation, preparing the students for the directed teaching the following year. Psychology I is a pre-requisite.

Second semester; M. W., 10 o'clock; two credit hours.

LXVI. *Educational Investigation.* This course is offered so that the particular needs of each student as revealed by his teaching and other professional courses may be met. Students will be especially encouraged to select problems that will give them training in the technique of educational investigation and experimentation.

Second semester; hours to be arranged; two credit hours.

LXVIII. *Vocational Education.* A course dealing with the fundamental problems of vocational education giving these problems

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their proper historical setting. Among the topics that are considered are; purposes of vocational education; federal, state and municipal plans for vocational education; surveys; vocational guidance; etc. Required of teachers of vocational subjects.

Second semester; T. Th., 11 o'clock; two credit hours.

LXIX, LXX. *Story Telling.* The art of story telling is a well recognized method and factor in elementary education. The ability to tell a story well is a necessary part of the equipment of all teachers of children. It will be the purpose of this course to give instruction in the foundation principles and methods found most effective in the art of telling stories, as well as to provide the teacher with a list of best stories to tell children.

Both semesters; hours to be arranged; one credit hour each semester.

LXXII. *Library Science.* This course will aim to give to rural teachers some fundamental principles and practical information in the selection and use of a school and community library. Ways and means of having the rural school serve as a branch of the county library will be suggested and outlined.

Second semester; hours to be arranged; one credit hour.

LXXIII, LXXIV. *Education; Penmanship.* The Course is planned to meet the demand for trained teachers in Penmanship. Text: Palmer Business Penmanship. The text will be supplemented by observation of classes in the training school. A certificate will be granted to those who complete the course. Those who show unusual ability will be recommended to superintendents who desire supervisors of penmanship.

Both semesters; F. at 3 o'clock; one credit hour each semester.

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Military Science and Tactics

All able-bodied male students between the ages of 14 and 32 are required to take military training throughout the entire period of their connection with the University.

The Military Department is under the supervision of the Secretary of War, who prescribes the courses of study, provides an officer and a non-commissioned officer of the Regular Army to give the instruction, and keeps in touch with the progress of the work and maintenance of satisfactory standards, by means of an annual inspection made by an officer especially detailed for the purpose.

The military organization is known as the Cadet Corps, and includes an Infantry Unit, Senior Division of the Reserve Officers' Training Corps (abbreviated "R. O. T. C."). Membership in the R. O. T. C. is limited to students who are citizens of the United States, over 14 years of age, and who are physically able to perform military duty or give promise of becoming so on reaching military age. Such students, on completing the entire course, including two years of advanced military work, and such courses of summer camp training as may be prescribed, are eligible for appointment as 2nd Lieutenants in the Officers' Reserve Corps of the United States Army. Exceptional opportunities to obtain appointment to Officers' Training Schools are also afforded such men. Students who are not eligible for membership in the R. O. T. C. are enrolled as cadets but may not receive the special benefits accorded members.

UNIFORMS, ARMS, EQUIPMENTS, ETC.

A uniform consisting of cap, coat, breeches, leggings, and insignia, is issued without charge to members of the R. O. T. C. Shoes, shirts, and neck-ties must be furnished by the individual student. The uniform is serviceable and comfortable, and may be worn to classes by cadets upon drill days. Cadets not enrolled in the R. O. T. C. may be required to provide the entire uniform at their own expense.

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The Cadet Corps is armed at present with the U. S. Magazine rifle, model of 1898, known as the "Krag-Jorgensen," furnished without charge by the War Department. One 1917 rifle of the type used by the National Army is also furnished for demonstration purposes.

Each cadet below the grade of 1st Sergeant is issued a rifle, bayonet and scabbard, and cartridge belt, and a definite place in the Armory in which to keep them is assigned him. He is required to keep this equipment clean and in serviceable condition, and any damage to the same, due to neglect or carelessness, will be charged to the cadet responsible. Periodical inspections of arms and equipments are made by the Commandant in order to secure the proper observance of this requirement. Failure to clean the rifle for inspection is considered a serious offense and is dealt with accordingly.

When war conditions permit, an allowance of ammunition for gallery and range practice will be made by the War Department, an opportunity to obtain proficiency in military marksmanship being thus afforded the cadet.

DISCIPLINE

During the periods alloted military training cadets are under strict military discipline and are required to obey promptly and without question all lawful orders of the Commandant, Assistant Commandant, and cadet officers and non-commissioned officers placed over them. They are required also to observe the formal rules of military courtesy, a copy of which will be furnished without charge to each cadet.

Permission to be absent from any part of the military instruction will be granted only in cases of illness or exceptional circumstances. All time lost from any cause must be made up hour for hour. Unauthorized absences from military classes will subject the offender to additional penalties, and, if persisted in, render him liable to suspension or expulsion from the University.

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ADVANCED MILITARY WORK

Any member of the Senior division, R. O. T. C., who has completed two full years of service therein while in collegiate standing, and who has been selected for further training by the President of the University and Professor of Military Science and Tactics, will upon signing a certain written agreement authorized by Section 50, Act of June 3, 1916, be entitled while not subsisted in kind, to receive a cash allowance in lieu of commutation of subsistance. This allowance at present amounts to 30 cents per diem and is paid quarterly. As far as possible cadet officers are selected from men taking the advanced work, who, as part of their training, are required to take an active part in the practical and theoretical instruction of other cadets.

INSTRUCTION

The schedule of training prescribes a series of graded courses covering a period of four years, the object being to qualify a student to perform efficiently the duties of a Lieutenant of Infantry upon his graduation.

The basic courses include practical Infantry drill in individual, squad, company, and battalion movements; military ceremonies, courtesies, and honors; inspections; physical drill, bayonet and grenade training; the nomenclature, care and use of small arms and military equipments; musketry; first aid, hygiene and sanitation; field service regulations; construction of entrenchments; map reading and topography, etc., etc.

The advanced courses include organization; company administration; military supplies and property accountability; rendition of reports and returns; military correspondence; minor tactics, including solutions of map and terrain problems; strategy; Military History and policy; psychology of war; duties of officers, etc., etc.

All members of the R. O. T. C. should take at least a one year's course in modern language, preferably French. Civil Engineering I is also recommended as a most desirable adjunct to the military work.

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BASIC COURSES

1. Practical and theoretical military training.
First semester; M. W. F., 1 o'clock; one-half hour.

2. Continuation of Course 1.
Second semester; M W. F, 1 o'clock; one-half credit hour.

3. Continuation of Courses 1 and 2.
First semester; M. W. F., 1 o'clock; one-half credit hour.

4. Continuation of Courses 1, 2, and 3.
Second semester; M. W. F., 1 o'clock; one-half credit hour.

ADVANCED COURSES

5. (a) Continuation of Courses 1, 2, 3, and 4.
First semester; M. W. F., 1 o'clock; one-half credit hour.
(b) Military Art.
First semester; T. Th., hours to be arranged; two credit hours.

6. (a) Continuation of Courses 1, 2, 3, 4, and 5 (a).
Second semester; M. W. F., 1 o'clock; one-half credit hour.
(b) Military Art. Continuation of Course 5 (b).
Second semester; T. Th., hours to be arranged; two credit hours.

7. (a) Continuation of Courses 1, 2, 3, 4, 5 (a) and 6 (a).
First semester; M. W. F., 1 o'clock; one-half credit hour.
(b) Military Art. Continuation of Courses 5 (b) and 6 (b).
First semester; T. Th., hours to be arranged; two credit hours.

8. (a) Continuation of Courses 1, 2, 3, 4, 5 (a), 6 (a), and 7 (a).
Second semester; M. W. F., 1 o'clock; one-half credit hour.
(b) Military Art. Continuation of Courses 5 (b), 6 (b) and 7 (b).
Second semester; T. Th., hours to be arranged; two credit hours.
Courses 5 (b) 6 (b) 7 (b) and 8 (b) are open only to selected members of the R. O. T. C., who have signed a written agreement under Sec. 50, Act of Congress, June 3, 1916.

ELECTIVE COURSES

9. Military Law.
History. Constitution, jurisdiction, and procedure of military courts-martial. Martial Law. Articles of War. Selected cases. International Law as it affects military persons.
For Juniors and Seniors only.
First semester; T. Th., hours to be arranged; two credit hours.

10. Military Field Engineering. (Prof. J. C. Fitterer, C. E.)
Reconnaissance and topography. Field work. Field fortifications and demolitions. Military bridges, roads, and railroads.
Second semester; T. Th., hours to be arranged; two credit hours.

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MILITARY ORGANIZATION
1917-18

Captain Beverly C. Daly, U. S. Army, Retired, Professor of Military Science and Tactics, and Commandant of Cadets.

First Sergeant John L. Gagne, U. S. Army, Retired, Assistant to Commandant.

FIELD AND STAFF

Major Ben Appleby ..... Commanding Battalion
First Lieutenant Arthur Linden ..... Battalion Adjutant

COMPANY "A"		COMPANY "B"
Ralph W. Holland	Captain	Oscar Larson
	1st Lieutenant	Raymond Lundgren
Lloyd Buchanan	2nd Lieutenant	Art G. Burckert
John W. Sodergreen	1st Sergeant	Arthur Wichmann
A. C. Boyle, Jr.	Sergeant	Charlie Young
Arthur J. Jones	Sergeant	Harold Hicks
Alden Avent	Corporal	Theodore B. Olson
Charles Coolidge	Corporal	C. William Penland
Ralph E. McWhinnie	Corporal	Roger J. Cottle
L. Dewey Anderson	Corporal	Robert H. Burns
Leslie Crawford	Corporal	
Harry Titus (Acting Color Sergeant)	Corporal	
Allen, Robert	Private	Biglow, Terry K.
Baillie, Harmon	Private	Boyd, Neal F.
Bath, Herman	Private	Burckert, Fritz D.
Burk, Kenneth A.	Private	Burton, Glen R.
Butler, Richard H.	Private	Dukes, F. Kelly
Chedsey, Francis	Private	Erickson, Varner E.
Chedsey, John	Private	Essert, Arthur
Day, Albert M.	Private	Essert, Harold
DeKay, Emory L.	Private	Evans, Aubrey
Deming, Edward	Private	Galligar, Julius
Dennison, Arthur	Private	Heigert, Archie
Foster, Arthur	Private	Hoitsma, Irwin C.
Grant, George	Private	Hoitsma, Ralph
Hamilton, Richard	Private	Hunt, George
Ingham, Percy	Private	Ingham, Robert
Krueger, Louis T.	Private	Knight, Oliver
Laird, Glen	Private	Larson, Melvin
Lustgarten, David R.	Private	Layman, Frederick W.
Miles, Arthur	Private	Neff, Sam
Miller, E. Barthol	Private	Parker, Glen S.
Mundell, Arthur G.	Private	Schlosser, Paul
Perry, Walter D.	Private	Sheldon, Harry
Rhinehart, George	Private	Simmons, Carl R.
Sholl, Russell J.	Private	Simpson, Milward

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Smith, Lawrence	Private	Smith, Albert
Soule, R. Homer	Private	Timm, Herman
Spalding, Charles	Private	Tucker, Claire
Thompson, Robert A.	Private	Whitmar, Carroll A.

WITHDRAWN DURING YEAR TO ENTER MILITARY OR NAVAL SERVICE (14)

Captain Marshall M. Feris	3rd Officers' Training Camp.
1st Lieut. Arthur J. Nelson	Enlisted in U. S. Navy.
1st Lieut. Donald A. McDougall	Enlisted in U. S. National Army.
2nd Lieut. Henry R. Bray	Enlisted in U. S. National Army.
2nd Lieut. Burton W. Marston	3rd Officers' Training Camp.
Sergeant Dean F. Covert	3rd Officers' Training Camp.
Corporal Samuel Hitchcock	3rd Officers' Training Camp.
Private William H. Cheney	3rd Officers' Training Camp.
Private Roger C. Frisbie	3rd Officers' Training Camp.
Private Albert Lukken	3rd Officers' Training Camp.
Private Glenn E. S. MacBeth	3rd Officers' Training Camp.
Private Walter Storrie	Enlisted in Aviation Section, S. C.
Private Adrian F. Weaver	3rd Officers' Training Camp.
Private Jesse G. Wheeler	3rd Officers' Training Camp.

LEFT COLLEGE (18)

Private Sandford Baker	Private Frank W. Meeboer
Private William H. Birchby	Private George D. Moses
Private John Cunningham	Private George Osher
Private Joseph E. Evans	Private George H. Pickell
Private Charles G. Frazer	Private Ray Pranty
Private Orville W. Frazer	Private William A. Ryan
Private Raymond A. Frazer	Private Leonard Shaw
Private Samuel W. Grosse, Jr.	Private Charles W. Shoop
Private Glen Hartman	Private Walter Stoltz

DECEASED (1)

Private Clarence A. Jensen

RECAPITULATION

Field and Staff	2
Company "A"	39
Company "B"	38
Enrollment April 1, 1918	79
Entered Military or Naval Service	14
Left College	18
Deceased	1
Total for Year	112

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Non-Resident Instruction

The function of a State University is to meet the educational needs of the people in all feasible ways. The services of the faculty and the resources of libraries and laboratories should be made available not merely for young people who come to its campus but for the larger constituency of the whole people in their homes and communities throughout the state. The University of Wyoming wishes to meet these obligations as fully as possible.

Non-resident Instruction includes Correspondence Study, Traveling Libraries, Lecture Courses and University Centers, Agricultural Extension (see page 134), and General Information. In all cases the service rendered is given at a minimum cost, on payment of incidental fees and expenses.

Inquiries or communications with regard to Correspondence Study courses should be addressed to Professor H. C. Dale, Director of Correspondence Study, Laramie, Wyoming.

Correspondence on all other matters concerning non-resident study may be addressed to Acting President Aven Nelson.

DIVISION OF CORRESPONENCE STUDY

Correspondence Study courses form a part of the non-resident work of the University and are intended to place within reach of every citizen of the state instruction in all subjects that are taught in the class-rooms of the University. The institution is no longer considered to be maintained alone for those who receive instruction in its lecture rooms and laboratories. It is for all the people everywhere.

RULES FOR CORRESPONDENCE STUDY

A course by correspondence, when equivalent to one semester of resident collegiate work, may be recommended

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as such toward any degree offered by the University, but the University gives such credit only to students who subsequently enter upon resident work at the University, and, furthermore, it accredits no correspondence work except such as is taken under its own direction or by other institutions of equal rank. Not more than one-half of the work required for a degree or in completion of entrance requirements may be taken by correspondence.

Each course includes fifteen or more assignments to be covered by the student. The assignments may take the form of text-book, lesson-sheet, reference-reading, or quiz work, depending on the nature of the course. The papers are corrected and graded and returned to the student.

When a student has completed a course, a set of examination papers is sent to some responsible person in his vicinity, in whose presence the student takes the examination, and who will return the student's work to the University. If the examination is satisfactory, the student is given a certificate to that effect.

Books from the University Library, except those on reserved lists, may be loaned to correspondence students for limited periods.

In case the student fails to answer letters for six weeks, he may be considered to have discontinued the course and another fee may be required if, at any time, he wishes to continue. The cost of books or apparatus required by the student depends upon the course and can be ascertained by writing to the Director of Correspondence Study.

These courses are open to any one in Wyoming qualified to do the work required. No preliminary examination is required, but before beginning any course, consultation with the Director is advised. Courses may begin at any time from September to June, at the convenience of the instructor and the student.

FEES AND EXPENSES

Tuition for Correspondence Study is free, as in all departments of the University.

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A Matriculation Fee of $2.00 is paid by all students of the University at the time of admission to any department. This fee is paid but once during a student's entire connection with the University.

An Incidental Fee of $3.00 for six months' instruction is also paid by Correspondence students.

Other expenses for Correspondence students include merely the cost of their text-books, stationery, and postage. If books are borrowed from the University Library, transportation charges must be paid by the student.

COURSES

Correspondence Study courses are intended for two classes of students: (1) for those who desire practical information in such subjects as Accounting, Agriculture, Education, Engineering, Home Economics, and the like, which can be directly applied to one's individual occupation, thereby raising one's efficiency and earning power; (2) for those who are unable to attend the resident classes in the University but who desire either to complete part of their preparatory subjects or to take a portion of their College work by correspondence. The courses in the second group are identical with the preparatory and College courses offered in the resident classes and lead to the same credits.

For descriptions of courses offered see the Correspondence Study Bulletin which may be had on application to the Director.

TRAVELING LIBRARIES

As one branch of the non-resident work of the University Traveling Libraries have been maintained since 1913. Small libraries composed of sets of twenty to twenty-five books are sent to any part of the state free of cost except for the transportation charges. The libraries, or boxes with the books, weigh about fifty pounds and are frequently sent

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by parcel post. Libraries may be kept for a period of two months. The list of books in each library covers a variety of subjects—fiction, history, biography, science, travel, and children's literature.

LECTURE COURSES AND UNIVERSITY CENTERS

The faculty of the University will respond as fully as possible to calls for lecture courses throughout the state. For this educational service the cost to any community will be local expenses with entertainment of the lecturer selected. The lectures are given free.

There are many subjects in which such courses may be pursued with profit. English Literature, Greek and Roman Literature, French Literature, Education, Political Science, Psychology, History, Botany, Chemistry of Food, and Agriculture, are well adapted to such courses. Lectures in laboratory subjects are of less value and are not recommended. All members of the faculty solicit correspondence relative to non-resident lectures.

The professors of the University are often called on for lectures and addresses before schools, clubs, and teachers' institutes and will be glad to meet such demands as far as their time permits. To make arrangement for such work address the President of the University.

Arrangements may be made for the organization of centers of University study in such towns or cities of the State as can furnish leaders who are satisfactory to the University. The organization of University centers is made through the Director of Non-resident Instruction and the local superintendent or principal of schools. It is expected that the work selected will conform to regular courses offered in one of the Colleges of the University, but meetings and methods of study will be arranged somewhat to suit the convenience of those taking the course. In some cases, professors from the University may meet these non-resident classes.

The local leader of such a center must have had satis factory collegiate training in the subject in which he is to

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lead. He is expected to direct the recitations and reviews under the supervision of the University and to make detailed reports as to number, dates, and length of meetings, as well as to the content of readings and reviews. When the group is ready for examination, the leader should report the fact to the Director and help to make arrangements for such examination, which, in most cases, should be held under some local school officer. Papers are then forwarded to the University to be graded. Credits are granted in appropriate amounts for courses satisfactorily completed.

GENERAL INFORMATION

Members of the faculty in all departments will respond to inquiries from citizens of the state on questions within their several fields. The scholarship and technical skill of the faculty and the resources of the library are thus made available in all reasonable ways for the service of any interested citizen who wishes to have expert help on his problems. Books are loaned, as far as may be consistent with the regular needs of the University, merely on prepayment of express charges. Questions on historical, governmental economic, literary, scientific, technical, or other subjects, are answered freely and as fully as circumstances will permit.

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The Summer School

FACULTY OF THE SUMMER SCHOOL

Regular Members of the University Faculty

Aven Nelson, A. M., Ph. D.
Acting President and Professor of Botany.

Julian E. Butterworth, A. M., Ph. D.
Director of Summer School and Acting Dean of the College of Education.

Frank Sumner Burrage, B. A.
Secretary and Registrar.

Grace Raymond Hebard, M. A., Ph. D.
Professor of Political Economy and Librarian.

Arthur Emmons Bellis, M. S.
Professor of Physics.

Raymond Burnette Pease, A. M.
Professor of English.

Harvey L. Eby, A. B.
Professor of Rural Education.

Earl Kilburn Kline, M. A.
Professor of Modern Languages.

Ruth Adsit,
Professor of Elementary Education, and Supervisor of the Training Grade School.

E. Deane Hunton, M. B. A.
Professor of Commerce.

James Reason Coxen, A. B.
Professor of Industrial Education.

C. V. Williams, *A. M.*
Professor of Agricultural Education.

Emma Howell Knight, B. A.
Assistant Professor of Home Economics, and Adviser of Women.

Ralph E. Berry, B. L.
Assistant Professor of Commerce.

James F. Groves, S. M., Ph. D.
Assistant Professor of Biology.

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JOHN LUKKEN, B. A.
Acting Director of the Department of Music, and Instructor in Vocal Music.

CLARA FRANCES MCINTYRE, A. M.
Assistant Professor of English.

MABEL LOUISE ANDERSON, M. A.
Assistant Professor in the Teaching of English.

MORNA A. WOOD,
Assistant Adviser of Women.

KATHERINE A. WALLER,
Instructor in Home Economics.

MARY E. SMITH, PH. B.
Assistant Librarian, University Library.

AMANDA E. CLEMENT,
Instructor in Physical Training for Women.

ARTHUR C. CROSS, M. A.
Principal of the University High School, and Instructor in History.

AMY GARDNER, B. A.
Instructor in Drawing.

CADY KENNEY,
Instructor in Organ and Piano.

LAVINA STEWART, B. A.
Cataloguer in Library.

CRITIC TEACHERS IN TRAINING SCHOOL

ANNA L. RICE, B. PED.
EUGENIA M. NEER.
MARY HOLLENBACK, B. S.
MARGARET E. MULLISON.

SPECIAL INSTRUCTORS

WILLIAM B. GUTHRIE, PH. D.
Associate Professor of Political Science, College of the City of New York.
Special Lecturer in International Law and Diplomacy.

HELEN B. THOMPSON, PH. D.
Professor of Dietetics, Connecticut College, New London, Conn.
Home Economics.

REGINALD C. MCGRANE, PH. D.
Instructor in History, University of Cincinnati, Cincinnati, Ohio.
History.

PHILIP W. L. COX, B. A.
Principal of Ben Blewett Junior High School, St. Louis, Mo.
School Administration.

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H. M. HORST, PH. B.
Formerly District Superintendent of Rural Schools, Stark County, Ohio.
Rural Education.

MARGARET K. ROBERTS, B. A.
Supervising Critic and Instructor in Education, State Normal College, Bowling Green, Ohio.
Psychology.

WINNIE E. WHEELER, B. A.
Instructor in Geography, Montrose City, Colorado, Public Schools.
Geography.

IRA B. FEE, M. A.
Superintendent of Schools, Cheyenne, Wyoming.
Principles of Teaching, History of Education.

JOHN T. HAWKES,
Principal of the Johnson County High School, Buffalo, Wyoming.
City School Management.

W. B. GILLMORE, M. A.
Superintendent of Schools, Lander, Wyoming.
Grammar.

J. J. MARSHALL, M. A.
Principal of High School, Sheridan, Wyoming.
Algebra, Geometry.

R. C. BECKSTROM,
Principal of High School, Thermopolis, Wyoming.
Agriculture.

MRS. CLARA BOWMAN, B. A. IN EDUC.
Head of Normal Training, Douglas, Wyoming.
Physiology and Hygiene.

RUTH ELDER,
Teacher, Pine Bluffs, Wyoming.
Teacher in Elementary School.

COMMITTEES

Advisory:
PROFESSORS BUTTERWORTH, EBY, ADSIT, BELLIS, COXEN, HUNTON AND MISS WALLER.

Conference:
PROFESSOR EBY, PROFESSOR COXEN, COMMISSIONER CREAGER, SUPERINTENDENT FEE, COUNTY SUPERINTENDENT KINDER.

Recreation:
PROFESSOR PEASE, PRINCIPAL BECKSTROM, MRS. KNIGHT, SUPERINTENDENT WILLER, MISS CLEMENT, PRINCIPAL CROSS.

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Summer School Dinner:
PRINCIPAL CROSS, SUPERINTENDENT GILLMORE, PRINCIPAL MARSHALL, SUPERINTENDENT FEE, DR. THOMPSON, COUNTY SUPERINTENDENT KINGSLEY.

County Organization:
PROFESSOR EBY, SUPERINTENDENT BURGOON, PRINCIPAL HAWKES, PROFESSOR COXEN, COUNTY SUPERINTENDENT WELLS, COUNTY SUPERINTENDENT BANNER.

The President of the University and the Director of the Summer Session are ex-officio members of all committees.

GENERAL INFORMATION

PURPOSE AND OPPORTUNITIES

While the Summer School is intended primarily for the training of teachers, it is not limited to this function, being really a six weeks' short course for all residents of the state who wish to add to their professional and cultural attainments.

In serious times like these it is well to give increased emphasis to the importance of our public school system. No matter how serious or long continued the war may be, we cannot afford to neglect the education of our children. On the contrary, the teacher should train himself to see more clearly than ever the aims of the public school and how to achieve those aims in the light of the present and future demands of actual life.

There is already throughout the country a shortage of teachers due to the demands of the war. Unless Wyoming is to have serious difficulty in securing a sufficient number for next year, it will be necessary for every person who possibly can to prepare himself for this work. Increased compensation is certain to make the field more attractive.

The University of Wyoming is desirous of doing its share to the fullest degree in meeting these problems, and it will be noticed that the Summer School has been organized with this end in view. A brief statement is here made of the opportunities offered. A study of the courses themselves will reveal the details of how the results are to be obtained.

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1. *State Certificate Requirements.* The new regulations of the State Board of Education concerning the certification of teachers go into effect July 1, 1918. It would be well for each teacher or prospective teacher in the state not holding a life professional certificate to receive definite information concerning her status as a teacher. This may be secured from the county superintendent or from the State Department of Education at Cheyenne. The Summer School will offer the opportunity for every teacher to meet the new requirements either through the presentation of Normal or College credits or through preparation for the state examinations. Attention should be called especially to the fact that those who take Normal School courses in order to meet the increased requirements for a certificate or in order to transfer their old certificate to a new one, may, if their high school work is completed, have these courses count toward the completion of the regular Normal School curriculum.

2. *Rural Teachers.* Courses will be given in all phases of rural education. The new model rural school building is now completed and a rural school will be conducted for observation and practice purposes. Particular attention is called to the courses offered especially for rural teachers in Sewing, Cooking, Manual Training, General Science, and Industrial Arts.

3. *City Elementary Teachers.* Courses in School Management, Special Methods, Educational Psychology, Principles of Teaching, History of Education, and the academic subjects are being offered as usual. The elementary school will be in session for observation and practice teaching.

4. *High School Teachers.* Several courses in each of the fields of English, Science, History, Political Science, and Foreign Language will be offered. Among the professional subjects are: Educational Psychology, Principles of Teaching, and the Junior High School. These courses will enable those who are lacking a few credits in order to complete the requirements in a major or a minor subject or in the

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professional subjects for one of the new high school certificates to secure them.

5. *Vocational Teachers.* The war is teaching us that we cannot afford to neglect the type of education that prepares for definite lines of occupational work. The federal government has recognized this and, through the Smith-Hughes Act providing state and federal aid for vocational education, is putting its theories into practice. Teachers of Home Economics, Manual Training, and Commercial Subjects will find special subject matter and professional courses suited to their needs.

6. *County Superintendents.* Those responsible for the supervision of the rural schools will find just the sort of courses that will be most helpful for dealing with Wyoming rural conditions. For those, who, because of professional duties, cannot attend for the entire six weeks, a special short course of three weeks has been planned. For details, see the statement under the Department of Rural Education.

7. *City Superintendents and Principals.* An unusual variety of administrative courses are being offered. One, dealing with the administration of vocational education, will be valuable for those now having vocational courses in their schools or planning the introduction of such courses. Throughout the country much attention is now being given to self-surveys of public school systems. A man qualified by technical training and experience to give practical work in this field has been secured. Other professional courses are: The Junior High School, Vocational Education, Organization of Ungraded and Special Classes, Mental Testing, History of Education, and Principles of Teaching.

8. *Stenographers, Typists, Bookkeepers.* In order to meet the unprecedented demands of the Government and of Industry for clerical assistance, the Department of Commerce is specializing on these three phases of the work. Those who have been wishing for an opportunity to secure

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a short, intensive training along these lines will find their needs fully met.

9. *General Cultural Training.* The variety of courses offered in Political Science, History, Economics, Literature, French, Spanish, Psychology, Science, etc., is evidence that the needs of the person who wishes to familiarize himself with the most recent developments in the sciences and the humanities have not been overlooked. This should be and is an increasingly important function of the Summer School.

To all Wyoming people the University Summer School offers a splendid opportunity for getting acquainted, and for securing that sympathetic understanding of each others problems necessary to united action.

ADVANTAGES OF LOCATION

No better place for a summer school could possibly be found than at the University of Wyoming at Laramie. The city is situated at an elevation of nearly seventy-two hundred feet in a large valley surrounded by beautiful snow-capped mountains. It is never warm enough to interfere with systematic work. This usual difficulty in the matter of summer schools entirely disappears here. While at lower altitudes young people find it very depressing to carry on work of that kind because of the summer heat, students who come here to attend the Summer School find that they can do much hard work and still enjoy it as if it were a vacation.

OPPORTUNITIES FOR RECREATION

You will attend summer school primarily, of course, for serious study, but that purpose will be more fully achieved if you have regular periods of relaxation. Unusual attention will this year be given to this matter. The summer school excursion and picnic will be held as usual, besides which the recreation committee will make every effort to provide picnic facilities for small groups at any time. An entertainment course of about four numbers will be furnished, for which a small charge will be made. It is hoped that the various

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county organizations will give informal evening entertainments on the campus from time to time.

ADMISSION

No formal admission requirements are made of students who desire to enter review classes or courses in which they do not seek University credit. Persons who desire to pursue regular courses and receive credit therefor, must comply with the usual terms of admission stated in the University catalogue.

UNIVERSITY CREDITS

Certain of the courses offered in the Summer School are in the so-called common branches required for a state certificate. Such work not being offered in the regular courses in the University colleges and departments, no credits are given therein. For courses regularly offered in the different departments of the University, proper credit will be given if these courses are fully completed either by taking extra work in them during the summer session or by subsequently completing them by correspondence. Many students in the state find it very satisfactory to begin certain advanced work in the University during the Summer School and complete it afterwards by correspondence. Six semester hours credit is the maximum that may be obtained by any student during the session.

FEES AND EXPENSES

Fees. An incidental fee of five dollars is required of all students. Students who have not previously registered at the University will be charged a matriculation fee of two dollars in addition thereto. In departments requiring the use of apparatus and material, students will be required to pay the cost of any material consumed by them, together with all damages to apparatus due to neglect or carelessness.

Visitors' cards, entitling people to visit certain courses, can be had for $1.00 per course. These are not for the use of regular students, but for those who simply desire to attend some lecture course as auditors.

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Board and Room. One hundred and fifty or more young women may obtain room and board, including all modern conveniences, at the women's dormitories and annexes for thirty-six dollars each for the term of six weeks. Because of the limited space, applications for reservations should be made early. The University will have lists of desirable rooms and boarding places with good families in the city for those who cannot be accommodated in either of the dormitories or their annexes.

The average cost of rooms in private homes is about $2.00 per week when two persons room together or about $3.00 per week when one occupies a room alone.

Men may obtain board at the Men's Commons at $5.00 per week.

REFUND OF RAILROAD FARE ABOVE $10.00

In order to equalize the opportunities for attending the Summer School, the University will pay that part of the railroad fare that is above $10 for the round trip. This means that no matter in what part of the state a person may be living, he will be required to pay only a reasonable sum for the privilege of attending the Summer Session. In order to insure that this arrangement will accomplish the purpose for which it is intended, and in order that its provisions may be clear to all concerned, the following rules have been established as the basis for giving the rebate:

1. Only persons living in Wyoming are entitled to the refund.

2. The student must register during the first two days of the session (June 17 or 18) unless excused by the president of the University for good and sufficient reasons.

3. The student must remain until the last day of instruction (July 24) unless excused by the president for good and sufficient reasons.

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4. A schedule amounting to not less than 4 semester hours of credit (or its equivalent in high school subjects and the common branches) must be carried.

5. The student must take advantage of the round trip rates given those attending the Summer School.

6. No refund will be made for such items as automobile hire, Pullman, meals. *The refund will be granted for railroad fare only.*

MEN'S CLUB ROOM

This is a new feature of the Summer School, providing a cozily furnished room with magazines and newspapers where the men may go for study, conferences or visits.

REDUCED RAILROAD FARE

Through the kindly co-operation of all the railroads of Wyoming, *round trip* tickets, Laramie and return, may be secured at all stations, on the payment of one and three-fifths fares.

The rates are available to the following groups:

1. Students for the special six weeks session, beginning May 6th.
2. Students for the regular six weeks session, beginning June 17th.
3. Winners of the championships in Boys' and Girls' Club work, course beginning June 23rd.
4. Students for the Rural School Conference; the High School Conference and the Superintendents' Short Course who can come on the dates given below and stay through their several meetings.

All are advised to consult railroad ticket agents some days in advance of the date of travel. The agents may need to secure suitable tickets and copy of the order authorizing the round-trip rate.

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DATES OF SALE

Union Pacific, including the Short Line, May 5th and 6th; June 15th and 16th; June 22nd and 23rd.

Colorado and Southern, same dates as the Union Pacific.

Chicago and Northwestern, May 4th and 5th; June 14th and 15th; June 21st and 22nd.

Chicago, Burlington and Quincy, same dates as the Chicago and Northwestern.

Colorado, Wyoming and Eastern, May 4th; June 15th; and June 22nd.

Saratoga and Encampment, same dates as the Colorado, Wyoming and Eastern.

EDUCATION CONFERENCES

The University Summer School will continue its policy of past years of holding conferences in behalf of better schools for Wyoming. These conferences have in the past been conducted by the departments of rural education and secondary education separately on different weeks or different days of the same week. This year, however, the meetings of the two conferences will be held simultaneously, after the manner of the several sections or departments of the State Teachers' Association. A joint program will be issued by the two conferences, such as "Better Schools Conference Program." These conferences will be held the week beginning July 8, 1918. The dates of the High School Conference will be July 10th, 11th, 12th. The Rural School Conference will be on July 9th, 10th, 11th, and 12th. The programs of these conferences will be issued in due time.

SUMMER SCHOOL DINNER

Sometime during conference week a dinner, followed by an informal program, will be given. This will enable both those in the summer school and those coming for the conferences to have a "get-acquainted" affair. It is expected that this will become an annual event.

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TEACHERS' EXAMINATION

Arrangements have been made with the State Board of Education, whereby a special examination will be held at the close of the Summer School for the accommodation of teachers attending the summer session. This examination will be held in Laramie on the 25th, 26th and 27th of July this year. All teachers in the Summer School, whether residents of Albany County or not, will be permitted to take the examinations here.

COURSES OF STUDY

The courses offered in the Summer School are given in the College of Education and State Normal School, the College of Liberal Arts, including the Divisions of Letters and Sciences, Commerce and Music. Also the College of Agriculture including the Division of Home Economics, and other courses as there are demands.

In addition to the work in these Colleges and Divisions, courses are given in subjects for the State Examinations.

Full particulars and descriptions of these courses can be found in the Summer School Bulletin, copies of which can be had upon application to the University office.

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School for Nurses

By a recent agreement the "School for Nurses" established at the Ivinson Memorial Hospital in 1916 has become affiliated with the University of Wyoming. This new well equipped hospital in its beautiful commodious building is located just off the University grounds in an attractive part of the city.

The medical staff and the corps of nurses of the Hospital will give the instruction in the professional subjects, while the instruction in the academic subjects will be given by the University in its regular classes or, if need be, in classes specially organized for this purpose. The "School" offers to women desirous of becoming professional nurses a course of theoretical and practical instruction extending over a period of three years.

Candidates for admission should possess previous training to the extent of four years of high school work. The high school diploma or other evidence of equivalent work should be presented with the application. Detailed information in regard to all matters pertaining to the "School" may be had upon application.

COURSE OF STUDY*

FIRST YEAR

First Semester	Second Semester
Anatomy, Physiol. & Hygiene, 3 Hrs. on Tu.	Anatomy, Physiol. & Hygiene, 2 Hrs. on Tu.
Theory and Practice of Nursing, 1 Hr. on W. & F.	Physiological Lectures, 1 Hr. on W. & F.
General Chemistry, 2 Hrs. on M.	Bandaging, 1 Hr. on M.
	History & Ethics of Nursing, 1 Hr. on Th.

*The courses given by the University will receive collegiate credit in accordance with the character of the courses, the time involved, and the results attained.

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SECOND YEAR

Urinalysis, 1 Hr. on M.
Bacteriology, 1 Hr on W.
Foods, 2 Hrs. on T. & Th.
Materia Medica, 1 Hr. on M.
Medical Lectures, 1 Hr. on W.
Dietetics, 2 Hrs. on T. & Th.

THIRD YEAR

Obstetrics, 1 Hr. on M.
Sanitation, 1 Hr. on Tu.
Nervous Diseases, 1 Hr. on W.
Massage, 1 Hr. on Th.
Occupations for Invalids, 1 Hr. on F.
Special Lectures, 1 Hr. on M.
Pediatrics, 1 Hr. on W.
Surgical Lectures, 1 Hr. on T. &. Th.
Ethics & Hospital Management, 1 Hr. on F.
Gynecology, 1 Hr. on M.

The completion of the above course entitles the student to a diploma under the seal of the University and attested by the signatures of the officers of the Hospital and the University.

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The Alumni Association

FORMED MARCH 26, 1895

Article 1, Section 1, Constitution: The object of this association shall be the promotion of University interests and the affiliation of its graduates.

Officers of the association for 1917-18 are:

President----------C. L. Rigdon, '02
First Vice-President----------Esther Downey, '17
Second Vice-President----Mrs. Laura Breisch Holliday, '09
Secretary----------Leslie Bailey Cook, '10
Treasurer----------Robert G. Fitch, '00
Secretary of Scholarship Fund----------Amy G. Abbot, '07
A. S. U. W. Representative------Benjamin C. Bellamy, '10

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Commencement of 1917

DEGREES CONFERRED

THE COLLEGE OF LIBERAL ARTS

Bachelor of Arts

Robert Marshall Anderson
Zelma Ellison Berry
Irving Eugene Corthell
Harry John Craig
Esther Irene Downey
Serafina Facinelli
Charles Stanley Greenbaum
Edwin Niles Hitchcock
*Flora Henrietta Krueger
Rameri Constantin Lauk
Tracy Stephenson McCracken
Edwin Blake Payson
John Thomas Peterson
Olive May Rathbun
Morgan Vardry Spicer
Horace North Wilcox
Clarence Hyacinth Bastian

THE COLLEGE OF AGRICULTURE

Bachelor of Science in Agriculture

Potter Bowman
Elwood E. Davis
Albert Richard Mau
Charles Wendell Skinner

THE COLLEGE OF ENGINEERING

Bachelor of Science in Mechanical Engineering
Harold John Miller

Bachelor of Science in Electrical Engineering
Robert Hanesworth

Bachelor of Science in Civil Engineering
Clyde Potter Matteson

*As of the Class of 1916.

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THE DEPARTMENT OF HOME ECONOMICS

Bachelor of Science in Home Economics

Clara Elizabeth Bastian
Mabel Frieda Knight
Nellie Evelyn Huff
Millicent A. Paulsen
Mary Orlena Spafford

THE COLLEGE OF EDUCATION

Bachelor of Arts in Education

Clara Bowman
*Elsie Menter

THE NORMAL SCHOOL

Diploma

Lucy B. Coleman
Marguerite Lorena Kennedy
Lois Coons
Charlotte Stanton
Margaret F. Coughlin
Margaret Joyce Sullivan
Susan Ethel Cutter
Mildred Margaret Sherman
Ellen Greenbaum
Elizabeth Marjorie Wood
Alberta Katherine Warlaumont

—

Mary Fletcher Kendrick
Harriette Blakeslee Lewis

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Students, 1917-18

Abbreviations

A.—Agriculture.
C.—Commerce.
E.—Engineering.
Ed.—Education.
H. E.—Home Economics.
L.—Liberal Arts.
Mus.—Music.

IN GRADUATE STANDING

Delo, Frank S., B. A.---Laramie
Lauk, Rameri C., B. A.---Laramie

SENIORS

Aber, Mary	H. E.	Wolf
Appleby, Ben	Ed.	Laramie
Atteberry, George C.	L.	Laramie
Bray, Henry R.	E.	Crookston, Minn.
Butler, Lois E.	L.	Laramie
Dana, Beatrice L.	H. E.	Sheridan
Downey, Dorothy D.	L.	Laramie
Ennis, Jennie L.	L.	Des Moines, Ia.
Frandsen, Christine A.	H. E.	Rawlins
Greenbaum, Ellen	L.	Laramie
Hess, Wright Ladd	A.	Douglas
Holland, Ralph Waldo	E.	Pleasanton, Kansas
Horning, Arnold O.	L.	Laramie
Jones, Arthur Jacob	L.	Burlington
Kline, Hilda H.	H. E.	Laramie
Larson, Oscar	A.	Lusk
Linden, Arthur	E.	Laramie
Lundgren, Raymond	E.	Laramie
McDougall, Donald A.	E.	Wheatland
Milligan, Marie B.	L.	Cheyenne
Nelson, Arthur J.	E.	Myrtle Point, Ore.
Timm, Herman	L.	Walla Walla, Wash.
Titus, Harry W.	L.	Laramie
Tyvold, Helen L.	L.	Laramie
Wichmann, Arthur	E.	Laramie
Wichmann, Dorothea A. S.	Ed.	Laramie

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JUNIORS

Anderson, Emily H.	H. E.	Laramie
Avent, Agnes E.	H. E.	Burlington
Avent, Maude L.	L.	Burlington
Ayers, Jennie M.	H. E.	Wheatland
Buchanan, Lloyd A.	L.	Cody
Burckert, Arthur G.	E.	Buffalo
Cloos, Katherine J.	L.	Torrington
Covert, Dean F.	A.	Cheyenne
Crosbie, Della	Ed.	Evanston
Erickson, Warner E.	L.	Verden, Okla.
Feris, Marshall M.	L.	Adrian, Mo.
Fessenden, Edith R.	C.	Sheridan
Gibson, Margaret G.	Ed.	Gillette
Hitchcock, Samuel	A.	Laramie
Hitchcock, Carrie	Mus.	Laramie
Kellogg, Stella C.	L.	Douglas
Krueger, Louis T.	E.	Rawlins
Longshore, Grace Margaret	H. E.	Bucknum
Marston, Burton Windfield	A.	Cody
Matheson, Amy E.	L.	Laramie
Nash, Ruth E.	H. E.	Cheyenne
Patrick, Leoti M.	H. E.	Lake Andes, S. D.
Peters, Edith J.	H. E.	Green River
Stager, Vernetta V.	H. E.	Sheridan
Woods, Mrs. Morna A.	Ed.	Alva

SOPHOMORES

Anderson, Leo Dewey	L.	Laramie
Avent, R. Alden	A.	Burlington
Banner, M. Norah	Ed.	Casper
Beck, Betty G.	L.	Cody
Brown, Meta C.	Ed.	Rawlins
Burns, Robert Homer	A.	Laramie
Cheese, Mary J.	Ed.	Evanston
Coolidge, Charles B.	L.	Laramie
Cottle, Roger James	C.	Green River
Coughlin, Anne L.	L.	Laramie
Crawford, Leslie S.	A.	Laramie
Day, Albert M.	A.	Jireh
Dennison, Arthur C.	E.	Rawlins
Dunn, Catherine M.	L.	Casper
Evans, Blanche M.	Ed.	Sheridan
Ever, Ethel Marie	Ed.	Laramie
Fisher, Norma A.	L.	Steamboat Springs, Colo.

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Foster, Arthur T.	L.	Laramie
Gaensslen, Helen Lina	L.	Green River
Garner, May	Ed.	Glenrock
Geer, Mrs. Myra E.	Ed.	Kemmerer
George, Sidney	Ed.	Laramie
Hanesworth, Ruth H.	Ed.	Cheyenne
Hartman, Glen	A.	Otto
Hasbrouck, Gladys	L.	Sheridan
Hicks, Joseph Harold	E.	Lander
Highley, Mae	Ed.	Rock Springs
Holliday, Mary Ethel	L.	Laramie
Hults, Josephine	Ed.	Sheridan
Laird, Glendon David	L.	Worland
Langheldt, Meredith L.	Ed.	Laramie
McKay, Ethel M.	H. E.	Kemmerer
McWhinnie, Ralph E.	L.	Douglas
Macbeth, Glenn E. S.	A.	Ogden, Utah
Menghini, Mary G.	Ed.	Rock Springs
Miles, Arthur F.	L.	Denver, Colo.
Mullison, Ana Theresa	Ed.	Laramie
Newsom, Ada Catherine	Ed.	Douglas
Olson, Theodore B.	L.	Laramie
Osmond, Mary	L.	Afton
Park, Grace	Ed.	Rock Springs
Penland, C. William	Ed.	Baggs
Perry, Walter D.	A.	Gillette
Pickell, George H.	L.	Powell
Pickering, Ruth	Ed.	Wheatland
Potts, Nettie V.	Ed.	Buffalo
Richardson, Mrs. Lillian	Ed.	Merna
Sodergreen, John Wm.	A.	Laramie
Spencer, Hazel I.	L.	Torrington
Steele, Elizabeth J.	L.	Longmont, Colo.
Tanner, Ursula D.	Ed.	Big Piney
Watson, Esther P.	Ed.	Lander
Whelan, Isabelle	L.	Rock Springs
Yeoman, Effie E.	Ed.	Sundance
Young, Charles Conrad	L.	Green River

FRESHMEN

Allen, Robert	E.	Douglas
Austin, Irvin Hugh	L.	Laramie
Baker, C. Sanford	E.	Casper
Banner, M. Helen	H. E.	Casper
Bath, Herman R.	A.	Laramie
Bell, Agnes	Ed.	Rock Springs
Bergquist, Dorothy H.	L.	Higho, Colo.
Biglow, Terry	Min. Eng.	Ashland, Wis.

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Birchby, William H.	L.	Sheridan
Boyd, Neal F.	L.	McSouth, Kans.
Bright, Maud Avery	Ed.	Torrington
Burckert, Fritz D.	L.	Buffalo
Burton, Glen S.	L.	Guernsey
Butler, Richard Holliday	A.	Laramie
Carmody, Ellen	C.	Laramie
Clifford, Mary R.	L.	Chicago, Ill.
Crawford, E. Opal	Ed.	Laramie
Davison, Gladys A.	H. E.	Meeteetse
Deming, Wm. Edward	E.	Powell
Dillingham, Winifred	L.	Blackwell, Okla.
Dukes, F. Kelly	L.	Saratoga
Essert, Arthur G.	L.	Laramie
Essert, Paul	L.	Laramie
Ewal, Elsa Berenice	L.	Douglas
Frazer, Charles G.	E.	Laramie
Fulferson, Bessie	C.	Powell
Galligar, Julius	E.	Wheatland
Gardner, Gladys	H. E.	Washington, Ia.
Gibson, Ethel Lois	C.	Sumner, Wash.
Goodrich, Dorothy	H. E.	Wheatland
Grant, George R. S.	A.	Wheatland
Grant, Margaret M.	H. E.	Wheatland
Gross, Samuel W.	L.	Memphis, Tenn.
Hall, Katie	Ed.	Wheatland
Harlow, Leda L.	Ed.	Newcastle
Harrison, Alfred	C.	Yorkshire, England
Heaton, M. Frances	C.	Cowdrey, Colo.
Heigert, Archie C.	E.	Pueblo, Colo.
Hoffman, Emily Bessie	Ed.	Clearmont
Holliday, Helen	L.	Laramie
Huff, Fredonia A.	Ed.	Casper
Ingham, Robert C. W.	L.	Laramie
Jensen, Clarence	E.	Laramie
Johnson, Mildred	Ed.	Laramie
Joslin, Dora M.	Mus.	Kemmerer
Judkins, Lenore	Ed.	Riverton
Keefe, Mildred	C.	Rawlins
Layman, Frederick Wm.	L.	LaCrosse, Wis.
Lustgarten, David R.	E.	Maywood, Ill.
McNally, Esther	L.	Roswell, N. Mex.
Marquis, Martha	L.	Casper
Mau, Mary T.	Ed.	Cokeville
Mau, M. Marguerite	L.	Cokeville
Meredith, Esther	Ed.	Lander
Miller, Barthol E.	Min. Eng.	Ashland, Wis.
Miller, Mary I.	Commercial	Laramie
Parker, S. Glenn	E.	Sheridan

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Ryan, Wm. Albert	C.	Rawlins
Shaw, Lenard Byron	C.	Douglas
Sheldon, Harry	C.	Worland
Sholl, Russell J.	E.	Millburne
Shoop, Charles Wm.	E.	Thermopolis
Simpson, Milward Lee	L.	Cody
Smith, Albert M.	C.	Sterling, Colo.
Smith, Lawrence	L.	Douglas
Soule, Homer Robert	L.	Laramie
Thees, Dorothy	C.	Laramie
Thompson, Alma	C.	Thermopolis
Tucker, A. Claire	E.	Egbert
Vaughn, Myra	C.	Lander
Ward, Violette D.	L.	Salt Creek
Warriner, Mrs. Florence	Ed.	Sheridan
Watson, Martha	C.	Lander
Whitmer, Carroll A.	L.	North Liberty, Ind.
Wichmann, Hildegard	Ed.	Laramie
Williams, Cora	H. E.	Acme
Wilson, Hannah	L.	Casper

SPECIAL STUDENTS

Atteberry, Mrs. George C.	H. E.	Laramie
Balch, Anna C.	H. E.	Laramie
Boyle, Lenore I.	L.	Laramie
Cheney, Will H.	L.	Casper
Clement, Amanda E.	C.	Hudson, S. D.
Corthell, Mrs. Eleanor	L.	Laramie
Corthell, Nellie	L.	Laramie
Dale, Mrs. Beulah G.	L.	Laramie
Donohue, Dorothy L.	C.	Laramie
Downing, Pearle	L.	Laramie
Dunlap, Florence M.	L.	Laramie
Eby, Mrs. Anna M.	Ed.	Laramie
Francis, Anne B.	L.	Laramie
Frazer, Orville	L.	Laramie
Frisbie, Roger	L.	Evanston, Ill.
Gloyd, Mrs. Myrtle	Ed.	Laramie
Hobson, Ivan L.	Ed.	Laramie
Hoefer, Mrs. Evelyn W.	L.	Laramie
Judd, Mrs. Estalle	L.	Laramie
Kendrick, Lillian B.	C.	Wichita, Kans.
Kolshorn, C. Henrietta	L.	Laramie
Latimer, Janie	H. E.	Colo. Springs, Colo.
Lukken, Albert	L.	Worthing, S. D.
McCloud, Erdean F.	L.	Lander

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McCollum, Mrs. Florence ---------C. ----------Laramie
McConnaughy, Hettie G. ---------L. ----------Pittsburgh, Pa.
McVeigh, Mabelle R. ----------L. ----------Laramie
Morris, Adelaide ----------L. ----------Lineville, Ia.
Mullison, Margaret ----------L. ----------Laramie
O'Roke, Earl C. ----------L. ----------Laramie
Rhinehart, George ----------A. ----------Newcastle
Rice, Anna L. ----------L. ----------Laramie
Ruegnitz, Rose ----------H. E. ----------Evanston, Ill.
Smith, Mildred E. ----------L. ----------Denver, Colo.
Sparwasser, Mrs. C. D. ----------H. E. ----------Laramie
Stanton, Lottie ----------Ed. ----------Laramie
Storrie, Walter ----------L. ----------Casper
Van Camp, Mary ----------L. ----------Los Angeles, Cal.
Wallace, S. Stuart ----------C. ----------Laramie
Waller, Katherine A. ----------L. ----------Freehold, N. J.
Weaver, Adrian ----------L. ----------Tie Siding
Wheeler, J. George ----------L. ----------Casper
Whitcomb, Emeline S. ----------L. ----------Laramie
Wirfs, Clare ----------L. ----------Shawnee, Okla.

NURSES TRAINING SCHOOL

Dalles, Celestia ----------Laramie
Greaser, Gertrude ----------Laramie
Wichmann, Gertrude ----------Laramie

UNIVERSITY HIGH SCHOOL

Anderson, Eva Sophia ----------Walden, Colo.
Baillie, Robert H. ----------Laramie
Beck, Jane T. ----------Cody
Beeler, Frances ----------Battle Creek, Colo.
Borton, M. Lillian ----------Laramie
Burk, Kenneth Alvin ----------Laramie
Burnette, Helen ----------Fort Washakie
Chedsey, John G. ----------Coalmont, Colo.
Chedsey, Francis J. ----------Coalmont, Colo.
Cory, Vivian A. ----------Laramie
Cunningham, John P. ----------Cheyenne
Davison, R. Isabelle ----------Meeteetse
DeKay, C. Gordon ----------Laramie
DeKay, Emory W. ----------Laramie
Delo, David M. ----------Laramie
Dodds, Ruth E. ----------Hanna
Earl, Ethel I. ----------Chance, Mont.
Essert, Harold ----------Laramie
Essert, Raymond ----------Laramie

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Evans, Aubrey ---------- Elk Mountain
Evans, Joseph ---------- Elk Mountain
Gilman, Ruth H. ---------- Laramie
Greenwood, Paul N. ---------- Laramie
Hall, Carrie ---------- Wheatland
Hall, Ruth G. ---------- Wheatland
Hamilton, D. Richard ---------- Youngstown, Ohio
Hoitsma, Ralph K. ---------- Torrington
Hoitsma, Irvin C. ---------- Torrington
Hunt, George D. ---------- Laramie
Hunter, Myrtle E. ---------- Cowdrey, Colo.
Ingham, G. Percy ---------- Laramie
Jamieson, Lois M. ---------- Laramie
Johnson, Alice C. ---------- Gunn
Kisor, Florence ---------- Fort Washakie
Knight, Oliver B. ---------- Laramie
Lane, C. Fred ---------- Laramie
Larson, Clara R. ---------- Milo
Larson, Melvin L. ---------- Hanna
Lehnert, E. Carl ---------- Laramie
L'Hommedieu, Florence ---------- Chicago, Ill.
Longshore, Lois A. ---------- Bucknum
McCarty, Katherine B. ---------- Laramie
McPhee, Avery ---------- Laramie
Marquardt, Christine ---------- Laramie
Maynard, Mary ---------- Laramie
Meeboer, Frank W. ---------- Mandel
Meeboer, Lawrence ---------- Mandel
Mundell, Arthur ---------- Upton
Neff, Samuel ---------- Cody
Nelson, Ellen ---------- Laramie
Pearce, Della ---------- Pitchfork
Pope, Mamie K. ----------
Prante, Ray ---------- Cody
Radichal, Elsie A. ---------- Bosler
Roberts, Gwen ---------- Wind River
Schlosser, Paul ---------- Riverton
Simmons, Carl ---------- Laramie
Smith, Imogene ---------- Laramie
Spalding, Charles C. ---------- Laramie
Stewart, Shelloc ---------- Laramie
Stoltz, Walter C. ---------- Laramie
Storey, Eva C. ---------- Laramie
Sweet, Gladys E. ---------- Worland
Thanheiser, Olga ---------- Laramie
Thompson, Robert ---------- Laramie
Warfield, Jefferson E. ---------- Sheridan
Watt, Grace H. V. ---------- Laramie
Wilkie, Alta Pearl ---------- Laramie

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MUSIC

Abbot, Grace S. ---------- Laramie
Appleby, Berenice ---------- Laramie
Bayless, Ward ---------- Laramie
Beacham, Mrs. Jean ---------- Laramie
Blair, Marguerite ---------- Laramie
Boyle, A. C. ---------- Laramie
Breisch, Susan ---------- Cheyenne
Cameron, Irving ---------- Laramie
Carter, Meryle ---------- Laramie
Coble, Hettie ---------- Cheyenne
Cordiner, Frank ---------- Laramie
Cruzen, Mrs. G. C. ---------- Laramie
Dawson, Irene ---------- Laramie
Eddleblute, C. E. ---------- Laramie
Ernest, Ethel F. ---------- Laramie
Friebel, Elsa H. ---------- Kalamazoo, Mich.
Harwood, Alice L. ---------- Minneapolis, Minn.
Hegewald, Edna ---------- Laramie
Hollenbeck, Mary ---------- Laramie
Holliday, Mrs. Laura B. ---------- Laramie
Hunton, John L. ---------- Laramie
Hurst, K. Cecil ---------- Laramie
Hurst, Robert ---------- Laramie
Hurst, Virginia ---------- Laramie
Johnson, Cora ---------- Laramie
Johnson, Evelyn ---------- Laramie
Kunzel, Ida C. ---------- Wichita, Kans.
McKay, Gertrude ---------- Laramie
Manby, Laura ---------- Denver, Colo.
Miller, Virginia ---------- Laramie
Ninde, Jane ---------- Laramie
Rawner, Ruth ---------- Laramie
Sawyer, Florence ---------- Laramie
Smith, Anna Lorena ---------- Laramie
Sohns, Rosalind ---------- Laramie
Svenson, Helen ---------- Laramie
Therkildsen, Thyra J. ---------- Laramie
Turner, Mrs. R. H. ---------- Laramie
Weightman, Irene ---------- Laramie
Wolcott, Louise ---------- Laramie
Wood, E. Crete ---------- Encampment
Wood, Mrs. E. L. ---------- Encampment

SHORT COURSE

Moses, George Dewey ---------- Tensleep
Osher, George ---------- Ishawooa
Shaw, Dewey B. ---------- Orin Junction

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RADIO-BUZZER

Blumer, Henry ---------- Laramie
Broderick, R. C. ---------- Laramie
Caveny, M. P. ---------- Laramie
Chaha, A. F. ---------- Laramie
Duffield, John W. ---------- Laramie
Gillespie, E. W. ---------- Laramie
Hanson, E. G. ---------- Laramie
Holland, R. W. ---------- Pleasanton, Kans.
Horning, A. O. ---------- Laramie
Isberg, E. M. ---------- Laramie
Johnson, C. C. ---------- Laramie
Johnson, W. D. ---------- Laramie
Klein, H. G. ---------- Laramie
Linden, A. ---------- Laramie
Lundgren, R. ---------- Laramie
McCue, L. P. ---------- Ranch, West Laramie
McCue, Ray ---------- Ranch, West Laramie
McDonnell, L. B. ---------- Laramie
McQuilkin, J. F. ---------- Laramie
Mahoney, Dan ---------- Laramie
Moir, Clarence ---------- Laramie
Moreland, Hugh ---------- Laramie
Parker, Wm. A. ---------- Laramie
Pierce, J. R. ---------- Laramie
Staback, H. W. ---------- Laramie
Titus, Harry W. ---------- Laramie
Wauchope, Stanley S. ---------- Laramie

SUMMER SCHOOL STUDENTS 1917

Abbot, Amy G. ---------- Laramie
Alexander, Dora I. ---------- Monarch
Allen, Eva L. ---------- Horton
Allentharp, Cecile ---------- Torrington
Allstott, Thomas ---------- Taswell, Ind.
Anderson, Ruth A. M. ---------- Burns
Appleby, Benj. H. ---------- Laramie
Atteberry, Mrs. Ruby ---------- Laramie
Atteberry, George C. ---------- Laramie
Atwell, Ellen B. ---------- Laramie
Augspurger, Hulda M. ---------- Laramie
Austin, Ava Anna ---------- Sheridan
Avent, Agnes E. ---------- Burlington
Avent, Maude L. ---------- Burlington
Ayers, Jennie M. ---------- Wheatland
Bailey, Lulu ---------- Dixon
Baldwin, Blanche E. ---------- Afton

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Barber, Mary ---------- Freedom
Barrus, Mrs. Martha ---------- Afton
Barstow, Mrs. G. J. ---------- Afton
Bentley, Annie J. ---------- Merna
Berry, R. E. ---------- Laramie
Bishop, Myrtle ---------- Superior
Blacker, Kemmel ---------- Afton
Bothen, Olga ---------- Laramie
Boyd, Neal Thomas ---------- McLouth, Kans.
Bowman, Clara B. ---------- Laramie
Bowman, Nina ---------- Leon, Ia.
Boyle, Elinor M. ---------- Ogden, Utah
Breese, Irene F. ---------- Laramie
Bright, Maud A. ---------- Torrington
Britt, Katherine M. ---------- Rock Springs
Brown, Gladys ---------- Laramie
Brown, Mabel Frances ---------- Newcastle
Brown, Mary E. ---------- Fairview
Browning, Lois E. ---------- Laramie
Brubaker, Orpha ---------- Laramie
Brueckner, Dorothea M. ---------- Laramie
Bryan, Luella ---------- Stewart
Burch, Ethel Mary ---------- Baggs
Burch, Joseph E. ---------- Kemmerer
Butterfield, M. Alma ---------- Sheridan
Burgoon, A. L. ---------- Diamondville
Burgoon, Mrs. A. L. ---------- Diamondville
Call, Rosa May ---------- Afton
Carna, Lydia A. ---------- New Cumberland, Ohio
Carroll, Margrett E. ---------- Penrose
Carroll, Martha Annie ---------- Penrose
Caste, Minnie M. ---------- Dallas
Casto, Nora ---------- Ft. Bridger
Cheese, Mary J. ---------- Evanston
Child, Edna V. ---------- Afton
Clardy, Pauline A. ---------- Dixon
Clement, Amanda E. ---------- Laramie
Cole, Gladys ---------- Cheyenne
Coleman, Lucy B. ---------- Thermopolis
Coulson, Clara G. ---------- Boulder, Colo.
Cranney, Genevieve ---------- Auburn
Cross, Faye ---------- Worland
Dana, Harriet D. ---------- Sheridan
Davis, Lillian G. ---------- Laramie
Doggett, Anna V. ---------- Denver, Colo.
Doubleday, Marguerite A. ---------- Laramie
Duffey, Edith B. ---------- Cheyenne
Easton, Marie ---------- Oakley
Easton, Mary ---------- Byron

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Egan, Emma A. ---------- Byron
Eby, C. M. ---------- Laramie
Eby, Mrs. C. M. ---------- Laramie
Elder, Ruth E. ---------- Oklahoma City, Okla.
Elgin, Ella G. ---------- Buffalo
Emmett, Gladys ---------- Lovell
Endicott, Inza Viola ---------- Upton
Ennis, Jennie L. ---------- Des Moines, Ia.
Evans, Blanche M. ---------- Sheridan
Evans, Hazel Iona ---------- Albin
Fedderson, Lucy A. ---------- Basin
Ferguson, Jennie ---------- Sheridan
Finnerty, Nora ---------- Little Bear
Fletcher, Etta ---------- Wendover
Fletcher, Lena F. ---------- Split Rock
Fuller, Mary Marguerite ---------- Cokeville
Gaddie, Mary ---------- Walden, Colo.
Gardner, Arling ---------- Afton
Gardner, Beatrice T. ---------- Afton
Gardner, E. Elona ---------- Afton
Garner, May ---------- Glenrock
Gaylord, Ina B. ---------- Lander
Geer, Mrs. Myra E. ---------- Kemmerer
George, Eula L. ---------- Laramie
George, Sidney ---------- Laramie
Germond, Gladys N. ---------- Madison, Wis.
Giffin, Gladys ---------- Cambria
Glasgow, Anne Marie ---------- Cody
Gloyd, Myrtle ---------- Laramie
Grant, Lita ---------- Lovell
Graves, Josephine E. ---------- Falls City, Nebr.
Green, Mary L. ---------- Burns
Hail, Mildred Mary ---------- Denver, Colo.
Hammond, Mrs. Willa B. ---------- Lander
Harbison, Mazie ---------- Big Horn
Harris, Amelia ---------- Lovell
Harris, Mabel Elizabeth ---------- Rawlins
Harris, Mabel Louise ---------- Des Moines, Ia.
Hayes, Alice ---------- Rock Springs
Healy, Clarice A. ---------- Rawlins
Hemmert, Viola C. ---------- Thayne
Henriksen, Anna ---------- Gillette
Henry, Anne M. ---------- Denver, Colo.
Hensley, Margaret J. ---------- Burlington
Hobbs, Grace B. ---------- Wheatland
Holliday, Mary Ethel ---------- Laramie
Holliday, Laura B. ---------- Laramie
Holliday, Helen E. ---------- Laramie
Hood, Annie Easton ---------- Fairview

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Horsley, Dorothy ---------- Ft. Collins, Colo.
Huff, Bessie C. ---------- Lakeview
Huff, Mildred B. ---------- Lakeview
Huff, Nelle ---------- Casper
Hunton, John L. ---------- Laramie
Immell, Ralph M. ---------- Laramie
Irving, Helen Aleen ---------- Rawlins
Isham, Fern Mabel ---------- Cody
Jamieson, Elsie L. ---------- Cheyenne
Jensen, Myrtle R. ---------- Grover
Johnson, Evelyn M. ---------- Laramie
Johnson, Laura K. ---------- Douglas
Johnston, Myrtle J. ---------- Evanston
Jones, Arthur J. ---------- Laramie
Kehoe, Eileen M. ---------- Cokeville
Kellogg, Stella ---------- Douglas
Kendrick, Mary ---------- Laramie
Kennedy, Anna ---------- Vermilion, S. D.
Kinley, Susan V. ---------- Susan
Klindt, Ada G. ---------- Sheridan
Kline, Hilda ---------- Laramie
Kleemann, Clara Agnes ---------- Laramie
Kolshorn, Henrietta ---------- Laramie
Kreutz, Elizabeth G. ---------- Burnt Fork
Lacy, Carrie L. ---------- Cheyenne
Ladd, Bess M. ---------- Hudson
Lane, Marion F. ---------- Laramie
Langheldt, Meredith ---------- Laramie
Lamphear, Sarah E. ---------- Crystal Lake, Ill.
La Pash, Edith ---------- Laramie
Larsen, Viola R. ---------- Afton
Lander, Annie M. ---------- Hanna
Lepponew, Ila S. ---------- Hanna
Linden, Etta ---------- Laramie
Linn, Leona T. ---------- Marbleton
Linn, Lois ---------- Marbleton
Listrom, Christine ---------- Parkville, Mo.
Listrom, Mollie ---------- Parkville, Mo.
Longshore, Margaret ---------- Bucknum
Love, Dorothea ---------- Wheatland
Lukken, Albert ---------- Worthing, S. D.
McBroom, Jessie M. ---------- Columbus, O.
McBroom, Earl ---------- Laramie
McCullough, Lenora Marie ---------- Van Tassell
McDougall, Birdie ---------- Sidney, Nebr.
McGlothen, Luella A. ---------- Burns
McIntosh, Roah ---------- Burlington
Madsen, Inez ---------- Moroni, Utah
Manion, Rose ---------- Laramie

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Manlove, Edith ---------- Sheridan
Mannahan, Alice M. ---------- Saratoga
Markley, Mrs. J. P. ---------- Laramie
Marlow, Chas. ---------- Laramie
Matheson, Amy E. ---------- Laramie
Maxon, Beulah ---------- Arminto
Maxwell, Lula ---------- Upton
Meredith, Esther ---------- Lander
Miller, Virginia ---------- Laramie
Milligan, Marie B. ---------- Cheyenne
Montgomery, Clarence ---------- Carpenter
Moon, Anna ---------- Rock Springs
Moffitt, Irene ---------- Rock Springs
Morton, Nell B. ---------- Gebo
Moyer, Henry H. ---------- Big Piney
Mullison, Ana ---------- Laramie
Mundell, Fern ---------- Upton
Nelson, Emma ---------- Wheatland
Nelson, Enoch ---------- Mink Creek, Ida.
Nelson, Ruth ---------- Wheatland
Nightser, Louise ---------- Laramie
Nottage, Irene ---------- Laramie
O'Brien, Christine ---------- Pine Bluffs
Olson, Hattie K. ---------- Laramie
Osmond, Mary ---------- Afton
Palmer, Julia Van Cleave ---------- Laramie
Peabody, Grace A. ---------- Laramie
Pearson, Florence ---------- Cheyenne
Pearson, Lillian ---------- Cheyenne
Pearson, Minnie ---------- Laramie
Pederson, Elizabeth ---------- Cheyenne
Peterson, Nellie ---------- Carthage, Mo.
Pfisterer, Evelyn ---------- Mountain View
Pfisterer, Maude ---------- Mountain View
Phelps, Mary E. ---------- Binford
Polland, Julia E. ---------- Labonte
Puff, Mrs. Mary E. ---------- Cumberland
Puntney, Evelyn C. ---------- Thermopolis
Quinn, Nellie V. ---------- Wamsutter
Rathbun, Wilma I. ---------- Torrington
Reed, L. Margaret ---------- Basin
Rhinehart, Elizabeth ---------- Newcastle
Rice, Blanche A. ---------- Sheridan
Richardson, Lillian H. ---------- Merna
Robinson, Jesse S. ---------- Paragoonah, Utah
Roosa, Angie ---------- Douglas
Salmon, Annie B. ---------- San Antonio, Tex.
Sander, Helen E. ---------- Laramie
Sayre, Anna B. ---------- Laramie

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Scott, Anna B. ---------- Laramie
Shedden, Miriam W. ---------- Rock Springs
Showalter, Elizabeth ---------- Lovell
Short, Iola F. ---------- Ranchester
Shumaker, Mrs. Hellen G. ---------- Laramie
Simmons, Jane Luella ---------- Laramie
Smart, Audrey A. ---------- Laramie
Sneddon, Jessie G. ---------- Diamondville
Snelling, Bessie K. ---------- Rock Springs
Sprowell, Elsie Mae ---------- Rock Springs
Stager, Vernetta ---------- Sheridan
Stanton, Lottie ---------- Laramie
Starner, Carrie M. ---------- Edgemont, S. D.
Starrett, Miriam F. ---------- Toronto, Kans.
Steele, Elizabeth J. ---------- Jonesboro, Ill.
Stewart, Nora ---------- Diamondville
Strauss, Carrie ---------- Bosler
Stubblefield, Ethel Lacy ---------- Cheyenne
Swanson, Bertha E. ---------- Diamondville
Swanson, Ruth E. ---------- Newman Grove, Nebr.
Swanson, Selma M. ---------- Diamondville
Sweet, Gladys E. ---------- Worland
Sweitzer, Olive ---------- Pinedale
Swisher, Lulu B. ---------- Cheyenne
Tenney, Arthur L. ---------- Denver, Colo.
Thees, Dorothy ---------- Laramie
Thomas, Clara J. ---------- Byron
Thompson, Anna ---------- Rock Springs
Thompson, Wilda E. ---------- Millburne
Toland, Ona L. ---------- Rozet
Tyvold, Helen ---------- Laramie
Von Pawel, Lorraine ---------- Laramie
Walker, Grace M. ---------- Sheridan
Wall, Mrs. Jeannette ---------- Merna
Warriner, Mrs. H. W. ---------- Sheridan
Watt, Emma J. ---------- Arvada
Weightman, Irene ---------- Laramie
Welsh, Anna ---------- Cumberland
Whittle, Leona ---------- Evanston
White, Bertha M. ---------- Rock Springs
Wilcox, Clara L. ---------- Saratoga
Williams, Olive M. ---------- Hanna
Wilson, Edna G. ---------- Saratoga
Wilson, Juanita ---------- Robertson
Wichmann, Dorothea A. S. ---------- Laramie
Wichmann, Hildegard ---------- Laramie
Wood, Ruth L. ---------- Garland
Young, Helen W. ---------- Rock Springs

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STUDENTS IN THE DIVISION OF CORRESPONDENCE STUDY
April, 1917, to April, 1918

Adamson, Esther M. ---------- Egbert
Allender, Alma C. ---------- Unionville, Ia.
Allenthorp, Cecile ---------- Laramie
Atkinson, Roy G. ---------- Douglas
Baker, Hazel E. ---------- Laramie
Barber, Scott P. ---------- Daniel
Barnes, R. H. ---------- Hanna
Bassow, Samuel H. ---------- Guernsey
Bassow, Solomon H. ---------- Guernsey
Beckstrom, Mrs. R. C. ---------- Thermopolis
Beckstrom, R. C. ---------- Thermopolis
Bell, Ben C. ---------- Kemmerer
Bemis, Matie ---------- Riverton
Bentley, A. Josephine ---------- Big Piney
Betts, Laura J. ---------- Laramie
Billings, Carl ---------- Chugwater
Bishop, Cora M. ---------- Carpenter
Bishop, Myrtle ---------- South Superior
Blackstone, Minnie L. ---------- Burlington
Boggs, Ethyle B. ---------- Albany
Boyd, Neal T. ---------- Crosby
Braden, Eva T. ---------- Fort Bridger
Bray, Henry R. ---------- U. S. National Army
Brokaw, H. F. ---------- Rock River
Brown, F. ---------- Laramie
Brown, May ---------- Ragan, Nebr.
Burch, Vera ---------- Baggs
Burford, A. D. ---------- Cokeville
Burgoon, A. L. ---------- Diamondville
Burnett, Dora ---------- Garrett
Burnham, Teressa ---------- Lovell
Burns, Alberta ---------- Sundance
Butler, F. R. ---------- U. S. National Army
Carlisle, W. L. ---------- Rawlins
Carlson, Ethel M. ---------- Aladdin
Case, Pearl P. ---------- Glearmont
Casto, Nora A. ---------- Callister
Challender, H. M. ---------- Newcastle
Christenson, Olga ---------- Stockton, Kan.
Clarke, F. A. ---------- Lander
Clark, Lois F. ---------- Sheridan
Cook, Mrs. W. B. ---------- Rock Springs
Corley, Irene P. ---------- Lucerne
Colson, Mabel L. ---------- Atlantic City
Cotton, Mrs. Inez ---------- Sheridan
Craven, Mary M. ---------- Clark

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Croft, Glen ---------- Cowley
Cross, Ethel M. ---------- Savageton
Dalley, Luella ---------- Driggs, Idaho
Davidson, A. A. ---------- Fort Bridger
Davis, Earle W. ---------- Cheyenne
Day, Albert M. ---------- Jireh
Deal, Belle M. ---------- Fort Steele
Delaney, Florence A. ---------- Meadow
DeNise, Dwight ---------- Boulder
DeNise, Geo. R., Jr. ---------- Boulder
Dew, John A. ---------- Kelly
Donaldson, Ruth M. ---------- Basin
Donohoo, Ella M. ---------- Lonetree
Downey, Alice ---------- Cheyenne
Draper, C. A. ---------- Craig, Colo.
Draper, Mary ---------- Rawlins
Duncan, Robert ---------- Circle
Eisenmann, Augusta ---------- Sheridan
Ellison, A. F. ---------- Burlington
Eshom, Mrs. Inez ---------- Wheatland
Evans, Gregg M. ---------- Buffalo
Evans, Ruth E. ---------- Riverton
Farmer, E. L. ---------- Buffalo
Federle, R. ---------- Van Tassell
Ferguson, Veronica ---------- Owen
Fey, C. E. ---------- Laramie
Fisher, Norma A. ---------- Steamboat Springs, Colo.
Fox, Myra V. ---------- Tipperary
Gaddie, Mary A. ---------- Walden, Colo.
Geer, Myra ---------- Sublet
George, Sidney L. ---------- Laramie
Gerrard, E. Violet ---------- Evanston
Gibson, Margaret ---------- Laramie
Gladfelter, Amy ---------- Slater
Gladfelter, Margaret ---------- Slater
Gordon, Everett ---------- Mountain View
Graham, Ida M. ---------- Carpenter
Green, Florence A. ---------- Fort Laramie
Griebel, Philip ---------- Burlington
Hall, William ---------- Rawlins
Hallowell, A. G. ---------- Gillette
Hanna, M. Winnifred ---------- Rock Springs
Harp, J. W. ---------- Douglas
Harris, Mabel ---------- Des Moines, Ia.
Harris, Pearl W. ---------- Lenore
Hasch, Henry ---------- Laramie
Hathaway, W. L. ---------- Kane
Hawes, J. M. ---------- Wheatland
Hawkins, Gladys ---------- Robertson

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Hayward, L. G. ---------- Millburn
Hejde, Ellen J. ---------- Aladdin
Hemmert, Viola C. ---------- Thayne
Henriksen, Anna M. ---------- Gillette
Henry, Anne M. ---------- Rawlins
Hett, C. M. ---------- Thermopolis
Hill, E. R. ---------- Carpenter
Hill, Gilbert A. ---------- Carpenter
Hilliard, Irene G. ---------- Encampment
Hitshew, Ida C. ---------- Lusk
Hosburg, Edith ---------- Arvada
Hunt, Mattie B. ---------- Buffalo
Hunter, Anna M. ---------- Hanna
Hunter, O. H. ---------- Ft. Logan, Colo.
Irwin, G. A. ---------- Meeteetsee
Irving, Helen A. ---------- Rawlins
Ivey, Hugh E. ---------- U. S. National Army
Jackson, Mrs. F. M. ---------- Upton
Jennings, Alice M. ---------- Bosler
Johns, A. W. ---------- San Francisco, Cal.
Johnson, Esther E. ---------- Laramie
Jolly, Mabel C. ---------- Cowley
Jolly, Mrs. M. B. ---------- Cold Springs
Joseph, W. A. ---------- Buffalo
Kane, Hazel B. ---------- Wheatland
Kennedy, Grace ---------- Clearmont
Kerns, Josephine ---------- Parkman
Kibbee, Martha J. ---------- Hudson
King, Mrs. J. B. ---------- Rock River
Klindt, Ada G. ---------- Sheridan
Knapp, Ruth M. ---------- Newcastle
Knight, E. L. ---------- Laramie
Kreutz, Elizabeth ---------- Lucerne
Krueger, Flora H. ---------- Rawlins
Krueger, Karl E. ---------- Rawlins
Kunzel, Ida ---------- Laramie
Ladd, Bess M. ---------- Hudson
Laporte, A. A. ---------- Riverton
Lee, J. A. ---------- Basin
Lindsay, A. J. ---------- Rock River
Lindsay, Chas. ---------- Byron
Linn, Lois ---------- Marbleton
Logan, Grace S. ---------- Carpenter
Lowrie, W. C. ---------- Gunn
Lyons, Vaughn D. ---------- Kemmerer
McDonald, J. A. ---------- Rawlins
McDougall, Birdie ---------- Gunn
McDougall, D. ---------- U. S. National Army
McGuire, Marguerite L. ---------- Lander

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McKinistry, H. C. ---------- Moran
McKittrick, Margaret ---------- Dayton
McLay, Jennie L. ---------- Tie Siding
McNamara, Mrs. M. J. ---------- Morgan
MacOwan, Amy ---------- Rock Springs
McPherson, J. B. ---------- Wheatland
McWilliams, Mrs. J. S. ---------- Buffalo
Marye, Alice ---------- Cora
Maxon, B. G. ---------- Arminto
May, W. C. ---------- Basin
Meredith, Dora A. ---------- Milo
Meyer, Adele ---------- Saratoga
Michaelson, C. N. ---------- Dixon
Mickey, J. L. ---------- Carpenter
Miller, Margaret E. ---------- Elk Basin
Miller, Mrs. W. S. ---------- Haxton, Colo.
Minnis, Mrs. F. A. ---------- Greybull
Mode, Emily ---------- Chugwater
Moffatt, Florence G. ---------- Mandel
Moody, Elmer N. ---------- Jackson
Moor, W. F. ---------- Basin
Moore, Lydia L. ---------- Bonanza
Morgan, Mary A. ---------- Saratoga
Mullen, Dan J. ---------- Rawlins
Nash, Ruth E. ---------- Cheyenne
Neely, Dorothy ---------- Lovell
Nelson, Elizabeth T. ---------- Saratoga
Nelson, Sena C. ---------- Flasher, N. D.
Neville, Jalie E. ---------- Moorcroft
Neville, Olivia D. ---------- Moorcroft
Norris, Ina ---------- Upton
Noland, Anna D. ---------- Thornton
Pailthorp, C. R. ---------- Ft. Washakie
Park, Aljoa ---------- Parkman
Park, Grace W. ---------- Laramie
Parrish, Dolly ---------- Lingle
Paton, Wm. ---------- Shell
Patterson, Vera ---------- Wheatland
Powers, Jennie G. ---------- Elk Basin
Prager, Sophia ---------- Garrett
Puff, Mary W. ---------- Cumberland
Rawlings, G. C. ---------- Soukup
Read, Elizabeth ---------- Douglas
Rice, Blanche A. ---------- Sheridan
Roberts, Martha J. ---------- Ft. Bridger
Robinson, Jane ---------- Sundance
Roosa, Angie ---------- Douglas
Rose, Emma E. ---------- Upton
Runser, Margaret K. ---------- Keeline

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Sackett, Lucinda H. ---------- Upton
Sayre, Anna B. ---------- Laramie
Schreibeis, C. D. ---------- Toltec
Shaw, D. B. ---------- Orin Jct.
Sidney, Mamie ---------- Himes
Silverstrand, Mary ---------- Stuart, Nebr.
Simpson, E. E. ---------- Ralston
Smith, Rev. L. D. ---------- Lander
Snell, H. C. ---------- Cowley
Sorenson, Carrie I. ---------- Arvada
Spafford, Mary O. ---------- Manderson
Sparwasser, C. D. ---------- Laramie
Stanton, Lottie ---------- Laramie
Stout, Paul A. ---------- Paonia, Colo.
Stover, Lena A. ---------- Beremerton, Wash.
Sullivan, Blanche M. ---------- Aladdin
Swanstrom, Ellen ---------- Marbleton
Swisher, Lulu B. ---------- LeRoy, Ia.
Switzer, Olive ---------- Pinedale
Syferd, Edith E. ---------- Little Horse Creek
Syferd, Ethel M. ---------- Phillips
Taggart, Mrs. C. ---------- Cowley
Tanner, Ursula ---------- Big Piney
Tenney, A. L. ---------- Cheyenne Wells, Colo.
Thode, Chrystal A. ---------- Rawlins
Tyvold, Helen ---------- Laramie
Van Tyne, Hettie L. ---------- Laramie
Watson, Lee ---------- Buffalo
Weightman, Irene ---------- Laramie
Whipple, Florence ---------- Chugwater
Wild, Mrs. A. ---------- Worland
Willer, Merton ---------- Shoshoni
Yarnell, Olive ---------- Lost Cabin
Yates, Martha R. ---------- Uva

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Students of 1917-18

SUMMARY OF REGISTRATION

Students in Residence

In graduate standing	2
Seniors	26
Juniors	26
Sophomores	54
Freshmen	77
Special	44
Nurses Training School	3
University High School	68
Music (not taking other subjects)	42
Winter Course	3
Radio-Buzzer Class	27
Summer School of 1917	261
	633
Less names counted more than once	30
	603

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Correspondence Study Department	239
Extension Center Students (Cheyenne)—	
Physical Training for Women	42
Training for Industrial Teachers	11
	292

Attendance at Extension Lectures, Teachers' Institutes, Farmers' Institutes, Short Courses, etc., is not counted in Registration statistics. Careful estimates indicate that direct educational service of all kinds has been given in 1917-18 to about 26,000 persons.

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